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Gandhiji's Talisman

I will give you a talisman. Whenever you are in doubt or when the self becomes too much with you, apply the following test:

Recall the face of the poorest and the weakest man whom you may have seen and ask yourself if the step you contemplate is going to be of any use to him. Will he gain anything by it? Will it restore him to a control over his own life and destiny? In other words, will it lead to Swaraj for the hungry and spiritually starving millions?

Then you will find your doubts and your self melting away.

mkGandhi

Editor's Note

One of the concerns for quality education for all is the education of children with special needs Inclusion in education makes it imperative for the school to cater to the needs of the individuals and groups suiting to their environment and capacity. It should take into account of factors such as health, gender, prior educational achievement, language, and geographical location of learners The efforts by the international agencies like the Unesco and the governments at the national and state levels through advocacy, policies, acts, though yielded fruits, inclusion has to take full shape yet.

The *National Curriculum Framework for School Education - 2000* (NCFSE-2000), while addressing education of the learners with special needs as one of the concerns for education for a cohesive society, makes it clear

Learners under this category have varied needs to be addressed. They ought to be given an opportunity to have access to curriculum throughout school span and to an individualised pedagogy. Teachers must make sincere efforts to develop a relationship and an atmosphere that would generate self-motivated, self-actualising, and self-monitoring learning. Instructional materials need to be produced to create new conducive conditions and provide experiences to those who, because of defacto or dejure segregation of school, are deprived of the opportunity to have direct learning experiences. (Page 10)

This issue of the Journal of Indian Education brings papers and articles exclusively on issues and concerns related to Inclusive Education. Authors from diverse points of view have brought out strategies for achieving inclusion of this category of children with special needs, besides presenting the experiences and innovations that have proved to be working effectively for such children. The ideas and experiments of the authors would impact the education providers, especially the teachers, who transact the curriculum into reality to achieve quality education for all, including the children with special needs.

We sincerely apologise for the delay in bringing out this issue Every effort has been made to update this issue and constant efforts are being made to bring out the following issues on time.

Academic Editor

CONSTITUTION OF INDIA
Part IV A

Fundamental Duties of Citizens

ARTICLE 51A

Fundamental Duties – It shall be the duty of every citizen of India —

(a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem,

(b) to cherish and follow the noble ideals which inspired our national struggle for freedom,

(c) to uphold and protect the sovereignty, unity and integrity of India;

(d) to defend the country and render national service when called upon to do so;

(e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diverstities; to renounce practices derogatory to the dignity of women,

(f) to value and preserve the rich heritage of our composite culture,

(g) to protect and improve the natural environment including forests, lakes, rivers, wildlife and to have compassion for living creatures,

(h) to develop the scientific temper, humanism and the spirit of inquiry and reform,

(i) to safeguard public property and to abjure violence,

(j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement.

research. The paper provides the rationale for using co-operative teaching strategies to effectively teach students with and without disabilities together into regular classroom.

Co-operative Learning

Definition of Co-operative Learning

Co-operative learning can be defined as a set of procedures in which students work in mixed ability learning groups for the purpose of achieving some common goals (Slavin, 1983 as cited in Cole and Chan, 1990).

Co-operative learning is where the classroom is structured so that the students are interdependent. In a co-operative learning situation students depend on each other to learn (Johnson & Johnson, 1989) It is different from individualistic and competitive learning situations In individualistic learning situations, students work on their own and there is no correlation among their learning goal attainments. On the other hand, a negative correlation exists in competitive learning situation among their goal attainment, if one student achieves a learning goal or succeeds another student fails or does not achieve the goal (Johnson and Johnson, 1983)

Essential Components of Co-operative Learning

Co-operative learning will be effective only if it has the following components (Johnson and Johnson, 1989, Slavin, 1991):

- Positive interdependence among group members
- Individual accountability
- Students have co-operative or collaborative skills
- Face-to-face interaction among students
- Students reflection and goal setting

Methods of Co-operative Learning

Though there are a number of methods of co-operative learning, this paper will address the seven most commonly used methods (Slavin, 1991) One commonality among all the methods is that students work in small groups or teams to help each other learn academic material.

(i) Student Teams Achievement Divisions (STAD) . STAD require students to complete a common worksheet in groups of four or five but to take individual tests The teams score is the result of individual students' improvement over past performance (Slavin, 1984 as cited in Goor and Schwenn, 1993).

(ii) Teams Games Tournament (TGT) : TGT is similar to STAD However, quizzes are replaced by weekly tournaments in TGT Students compete with members of other teams to contribute scores to their team and the winning team is given a reward that has more value than that won by the losing team (Slavin, 1986 as cited in Slavin, 1991).

(iii) Team Assisted Individualisation (TAI) . While in STAD and TGT a single pace of instruction is used for the whole group, TAI combines cooperative learning with individualisation of

instruction. Students are required to complete worksheets that are matched to the student's ability level and are assisted by a group monitor. If students meet a set criterion, they move to the next level (Slavin et al., 1986 as cited in Slavin, 1991).

(iv) Co-operative Integrated Reading and Composition (CIRC) : In the CIRC programme, which is especially designed to teach reading and writing, students work in pairs. The teacher uses a basic text and students work on activities like reading, word identification, spelling, comprehension and writing assignments. The aim of CIRC is to integrate both reading and writing Students edit each other's work to achieve the set objective for the team and earn rewards for the team (Stevens and Slavin, 1987 as cited in Slavin, 1991)

(v) Jigsaw 1 : In Jigsaw I students are assigned to six member teams to work on academic task that has been simplified by breaking down the task in simpler steps. Each team member works on a particular task and then meets with a member of another team who has worked on the same task to discuss their sections. The students return to their original teams to teach what they have learned about the particular section (Aronson, 1978 as cited in Slavin, 1991).

(vi) Jigsaw II : In Jigsaw II, instead of studying separate sections of a topic, all students do a common task and each student is assigned a task to become an expert on one particular section. Then, each student of a team meets students from other teams who have also become experts in the same section and discuss the material, after which they return to their teams Students then take quizzes which result in team scores, and if they meet preset criteria they are entitled to a team reward (Slavin, 1986 as cited in Slavin, 1991).

(vii) Learning together : Students work on assignment sheets in a heterogenous team. They receive a reward after they have finished the assignment. While assignment or final product is judged for its overall quality, individual efforts are usually not measured. Groups are compared and rewarded on the basis of the quality of final product produced by the group as a whole (Johnson and Johnson, 1987 as cited in Slavin, 1991)

Peer Tutoring

Definition of Peer Tutoring

Peer tutoring is defined as instruction provided by the peers of students and involves children teaching other children usually on a one-to-one basis (Ehly and Larsen, 1980, as cited in Cole and Chan, 1990).

Methods of Peer Tutoring

The three most commonly used methods of peer tutoring are same age or same grade, cross age or cross grade and classwide peer tutoring (CWPT). The following three sub-sections will address these methods.

(i) *Same Age Tutoring* : Same age tutoring involves a student in a class taking the role of tutor or teacher and instructing a student who is in the same class (Cole and Chan, 1990).

(ii) *Cross Age Tutoring* · In cross age tutoring older students tutor younger students of lower grade levels (Cole and Chan, 1990).

(iii) *Classwide Peer Tutoring (CWPT)* · Maheady, Harper and Sacca (1988a) describe CWPT as a type of peer tutoring in which all students in a class are involved in tutoring activities (either as tutor or tutee) during a specific period of the school day. The students spend 10-15 minutes playing each role

Research on the Efficacy of Co-operative Learning

(i) *Co-operative learning effective for all* : In order to evaluate the effects of co-operative learning on academic achievement, Slavin (1990) conducted a meta-analysis[2] of 67 high quality studies. Out of these 67 studies (conducted between 1972 and 1988), 61 investigated the effects of co-operative learning on academic achievement of students Of the 61 studies, 41 (61%) found significantly greater academic achievement in the co-operative learning group compared to the control group. In twenty-five studies (37%) no difference was found between the co-operative and control groups. In one study the control group outperformed the co-operative learning group on academic achievement measures. Although the results favour co-operative learning, the implications of these results for students with special needs is not very conclusive because in this meta-analysis very few studies were carried out with students with special needs. Based on this meta-analysis, Slavin concluded that group goals and individual accountability were essential for effective co-operative learning. He also concluded that co-operative learning will work when the group emphasis is on 'learning a task together' rather 'than doing a task together'.

(ii) *Effective for students with disabilities* . Another meta-analysis of 122 studies (conducted between 1924 and 1981) was conducted to evaluate the effects of co-operative learning on academic achievement (Johnson and Johnson, 1981 as cited in Johnson and Johnson, 1989b) The results of this meta-analysis indicated that in a co-operative learning situation students at the 50th percentile performed at approximately the 80th percentile of students in competitive and individualistic learning situations. The results of this meta-analysis have important implications for students with special needs as the findings hold true for all age groups, ability levels, subject areas and learning tasks (Johnson and Johnson, 1989b).

(iii) *Equally effective for all* : Comparing three different types of instructional strategies : co-operative learning, unstructured co-operative learning and individualistic learning, Yager, Johnson and Johnson, 1985 (as cited in Cole and Chan, 1990) found that in co-operative learning the results of academic achievement were 50% higher than the individualistic learning Moreover co-operative learning is equally effective for high and low achievers

(iv) *Effective for teaching various subjects* : Co-operative learning is found to be effective in improving academic performance in a number of subjects. It has been found to cause significant improvement in mathematics (Slavin, Leavy and Madden, 1984; Madden, Slavin and Farnish 1981, as cited in Morgolis and Freund, 1991) and reading and writing (Steven and Slavin, 1995) The study by Steven and Slavin (1995) has major significance because the research was based on a large population (1299) at varying grade levels (2-6 grade) and carried out for a relatively longer period (2 years) This study also found that co-operative learning enhanced meta-cognitive skills. It is important to mention here that meta-cognitive skills help learners with disabilities to make their learning active and self-directed and finally make them independent learners (Chan, 1996). In a review of the literature, Putman (1993) found that as a result of co-operative learning student achievement improved in various subjects areas such as language arts, geography, music, science and social science

(v) *Is it really so effective?* : Despite the evidence of efficacy of co-operative learning shown above some researchers (Tateyama and Sniezek, 1990) have questioned its efficacy in enhancing academic achievement of students with special needs Tateyama and Sniezek (1990) reviewed a few studies and concluded that co-operative learning does not guarantee gains in academic achievement. Stevens and Slavin (1991) re-analysed the studies reviewed by Tateyama and Sniezek and found that all the studies reviewed lacked two very essential components of co-operative learning: individual accountability and group rewards Both of these components are considered fundamental components of co-operative learning (Slavin, 1991, Johnson and Johnson, 1989) Slavin (1991) has criticised the methodologies employed in most of the studies to investigate the effects of co-operative learning. One such concern is with the time period of experimentation. Most experiments in co-operative learning are carried out for three to six weeks. This period is not enough to see the overall effects of co-operative learning (Slavin, 1991) and it cannot be known whether the results would remain consistent or whether they would fluctuate after this short period. Another concern with co-operative learning experimentation is the population studied. The majority of co-operative learning experimentation is carried out with students with mild disabilities, very little with students who have severe disabilities One reason for this could be a lack of social skills in this population which are considered a prerequisite of co-operative learning

Social Outcomes

Co-operative learning not only leads to improved academic achievement, it also enhances social outcomes such as improved self-esteem (Johnson and Johnson, 1989a, Johnson and Johnson, 1983), social skills development (Cole and Chan, 1990, Goor and Schewen, 1993), and more peer acceptance and friendship (Ballarad et al., 1977 and Cooper et al., 1980 in Slavin, 1991; Johnson and Johnson, 1989b) in students with special needs.

(i) *Co-operative learning improves self-esteem* · In their meta-analysis of 77 studies, which investigated effects of co-operative learning on self-esteem and social interdependence, Johnson and Johnson, (1989b) found very positive findings In 53 per cent of the studies statistically significant results were found to favour cooperative learning in contrast to individual or competitive learning situations. Of all these studies, only 1 per cent studies favoured the competitive learning situation to improve self-esteem. The self-esteem of the average student involved in co-operative learning was three-fifths of a standard deviation higher than that of the student involved in competitive learning and two-fifths of a standard deviation higher than the one working independently Cole and Chan (1990) also support the notion that co-operative learning improves the self-esteem of students with special needs. They claim that co-operative learning encourages communication among students and improves learning and interpersonal relationships. Improvement in self-esteem of students with special needs is also seen as a result of TGT and STAD (Slavin, 1990 as cited in Slavin, 1991), and in their self-concept as a result of TAI (Slavin et al , 1984 as cited in Slavin, 1991)

(ii) *Improves social behaviour and reduces problem behaviour* : In a study, Putman, Rynders, Johnson and Johnson, 1989, investigated the effects of co-operative learning on student's behaviour who have moderate and severe disabilities. They found that students who received co-operative skill instruction interacted more frequently and made more positive comments to one another compared to those who were not involved in co-operative learning. Adolescents with emotional disturbance, who were engaged in co-operative learning, showed a reduction in disruptive behaviour and improvement in on-task behaviour (Janke, 1978 as cited in Putman, 1993) and social behaviour (Slavin, 1977 as cited in Putman, 1993).

(iii) *Improved friendship and acceptance among mainstreamed students* : In Putman (1993) researchers (Ballarad, Corman, Gottileb and Kaufman, 1977; Johnson and Johnson, 1984, 1989, Johnson et al.,

1983) have shown that co-operative learning may foster friendship. The students with special needs are more likely to be accepted by peers in co-operative learning situations than in individualistic or competitive classroom situation, even though they do not contribute to group performance (Putman, 1993). This friendship is maintained into the post-instructional phase (Johnson and Johnson, 1989b). Use of STAD, one of the co-operative learning methods, has significantly reduced the degree to which the students without special needs rejected their classmates (Madden and Slavin, 1983 as cited in Slavin, 1991) Co-operative learning can also lead to improved relations with peers of different social and ethnic backgrounds (Lyman and Foyle, 1988 as cited in Goor and Schwenn, 1993) and enhances inter-ethnic friendship (Slavin, 1991).

Research on the Efficacy of Peer Tutoring

Academic Achievement

(i) Effective for both tutor and tutee : Peer tutoring is an effective method for students with and without disabilities Peer tutoring is found to enhance the academic performance of both tutor and tutee (Cohen, Kulik and Kulik, 1982). In a meta-analysis of 38 high quality studies, Cohen et al , found that peer tutoring not only improved the tutee's academic performance (Effect Size*=0.40) but also the tutor's academic performance (ES=0.33). The improvement in academic achievement is even greater for peer tutoring (ES=0.33) than for co-operative learning (ES=0.30 for all measures and 0 21 standardised measures) This implies that although both methods of learning are effective, peer tutoring is more effective than co-operative learning in improving the academic achievement of the students with special needs.

(ii) Effective with various students : In a comprehensive review of studies that have used peer tutoring as an independent variable Llyod, Crowley, Kohler and Strain (1988) have found that peer tutoring is a useful technique to improve academic performance of the students with learning disabilities, emotional or mental disabilities and academic disabilities (type not mentioned). They also found in this review that peer tutoring can be used to teach correct word recognition, spelling, reading performance and maths (computations). The CWPT model is widely used with students with special needs. It has been found very useful to improve the academic performance of students with learning disabilities (Maheady, Sacca, Harper, 1988a) and mildly handicapped

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* An effect size is the proportion of a standard deviation by which an experimental group exceeds a control group (Glass, McGaw, and Smith, 1981 as cited in Slavin, 1919)

students attending regular classes (Maheady, Harper and Sacca, 1988b). In his review, Putman (1993) concluded that if implemented systematically, this procedure can improve the proficiency in oral reading sight vocabulary, mathematics, social studies and spelling of elementary or high school students with disabilities.

(iii) *Students with disabilities can be effective tutors* : Realising that in the process of peer tutoring both tutor and tutee benefit (Cohen, et al., 1982), some researchers (Eiserman, 1988; Osguthorpe and Scruggs, 1986) attempted to change the role of the students with special needs from tutee to tutor and the results were very promising. Eiserman (1988) used the students with learning disabilities to tutor regular class students in teaching sign language. He found that both groups gained academically and socially, in this process Cook, Scruggs, Matropieri and Castro as cited in Cole and Chan (1990) and Osguthorpe and Scruggs (1986) reported that when students with special needs tutor other students their own learning improves to a significantly higher level than learning of those who do not tutor. However some studies have cautioned that effectiveness may be moderated by similarity in age and the achievement level of tutors and tutee-Depaulo, Tang, Webb, Hoover, Marsh, and Litowitz (1989), and academic deficiency of tutors-Wills and Cowder, (1974) Cole and Chan (1990) have emphasised the need of tutors to be trained before they start tutoring in order to gain maximum benefit for both tutor and tutee.

Social Outcomes

Research on peer tutoring also indicates that it is an effective measure to improve the social development of both tutor and tutee (Lloyd et al., 1988).

(i) *Effective with various students* : In single case studies, a special form of peer tutoring, called peer management, was employed to improve social outcomes (Llyod et al., 1988). In peer management, peers use prompts to promote social behaviour of a target student and deliver consequences for them (Lloyd et. al., 1988). Dougherty, Fowler and Paine (as cited in Lloyd et al , 1988) found peer management effective in increasing playground behaviour of two handicapped classmates (type of handicap not mentioned). Strain, Shortes and Timm, 1977 (as cited in Lloyd et al , 1988) found this technique useful to increase high rates of social interaction by a socially withdrawn child. Lovitt, Lovitt, Eaton and Kirkwood (as cited in Llyod et al., 1988) have found it effective to change the frequencies of appropriate and inappropriate comments by a nine-year old child with learning disabilities. Further evidence for efficacy of peer tutoring comes from another review of six studies carried out by Lloyd et al., (1988) where the sample size varied from 3 to 51 (average = 19), and peer tutoring was found to have promoted social outcomes for the students with mild disabilities handicap and low functioning autistic children.

(ii) *Reduces problem behaviour* : In the same review Lloyd et al., (1988) found peer tutoring effective in reducing behaviour problems of students with academic and social deficiencies, schizophrenia and mild mental disabilities (average sample size = 5.3) In addition, they found that techniques used in peer tutoring, peer monitoring and peer social groups can also be used to assist in the acquisition of appropriate social skills. Children who have difficulty in socialising with others benefit from being in the company of those who have positive social attitudes (Kohler and Fowler, 1985 as cited in Cole and Chan, 1990).

(ii) *Enhances positive attitudes among students* : Another positive social outcome of peer tutoring is a positive change in the attitudes of both tutors and tutees (Eiserman, 1988; Osguthorpe and Scruggs, 1986 and Cohen, et. al., 1982). Positive attitudes develop in both tutor and tutee, whether the learner with a disability act as tutor or tutee (Eiserman, 1988; Osguthorpe and Scruggs, 1986). The change in attitude does not occur at once (Eiserman, 1988) which implies if a change in attitudes is desired then peer tutoring should be implemented for a longer period.

(iv) *Self-concept and self-esteem* : In their meta-analysis*, Cohen et al., (1982) found that peer tutoring has a positive impact on the self-concept of both the tutee and tutor. Although positive changes in self-concept takes place as a result of peer tutoring, the changes are not big enough to be considered statistically significant (Cohen, et al., 1982). More positive evidence that peer tutoring improves self-esteem come from the study of Watts and Cushion, 1982 (as cited in Byrd, 1990). They found a significant improvement in the self-esteem of students with learning disabilities as a result of peer tutoring.

Conclusion

It is evident from this review that when co-operative learning and peer tutoring are carefully planned, implemented, and monitored they have the potential to improve the academic performance and social outcomes of the students with and without disabilities. They allow teachers to deal with students diversity in a manner that can productivity utilise the skills and knowledge of all students (Morgolis and Freund, 1991). In addition, cost effectiveness (Cole and Chan, 1990) attractiveness and practicability of these strategies to teachers (Slavin, 1991), are other reasons why these strategies seem to be appealing The review indicated that co-operative strategies have a number of benefits for students with and without disabilities as well as for their teachers. If the integrated education as articulated in the Persons with Disabilities Act has to be successfully implemented, it would be necessary to equip teachers with necessary skills who are or will be responsible for teaching students with disabilities in their classes. Inclusion of practical training to use peer tutoring and co-operative teaching techniques in teacher training programmes seems to be an important area that requires attention of university professional in India

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* Meta-analysis : A meta-analysis combines the results of independent studies that test the same hypothesis By quantifying the findings of studies using a common metric, inferential statistics are used to draw conclusions about the overall results of the studies (Glass, McGaw, and Smith, 1981 as cited in Putman, 1993)

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GUIDANCE is a process of helping an individual to understand himself/herself and his/her world It is a continuous process to help one realise his/her own potentials. It is to identify resources, goals, make plans and ensure ones own development. Guidance helps in optimal utilisation of National Resources.

Guidance is a sub-process of education and both go together. The purpose of education is to prepare a child for a good life and also to become a good citizen. Education develops him/her physically, socially, intellectually, spiritually and aesthetically Guidance lays emphasis on functions of education with special stress on human development and learning, and identifies potential to make one productive. Guidance aims at drawing out the best of body, mind and soul of an individual. It leads an individual from a point of crisis where one stops thinking to a point where he/she can see different solutions and leaves the decision to the person himself. It inculcates the spirit of self-direction,, self-discipline and self-dependence and self-actualisation in an individual and tries to mould one into a best learner, best worker, best citizen and best person.

Children with special needs with respect to this article are those who are physically or mentally challenged. Guidance to children with special needs includes involvement of their parents and siblings too It is important to accept that we aim at building an inclusive society We have moved from an era of empowering the child to overcome his/her deficits to an era where we are working to build an environment, which is conducive to empower the child. It is a shift from child deficit to environment deficit approach

In the present scenario guidance has to be child-centred and need-based. We need to work on the environment as a whole rather than being problem-specific. We have to work with child-centred approach and build an environment which is inclusive in true sense

Each individual has to pass through stage of growth, exploration, establishment and maintenance. Guidance to the children with special needs is important at each stage. Guidance plays an important role in ensuring healthy growth and development, effective exploration of alternatives, stable establishment and secured maintenance. For Guidance to be effective, we need to understand the child, the environment and people interacting with the child. We need to do proper assessment of these three aspects. We need to enlist the strengths in each of these three aspects. We need to enlist the areas that can be improved in each of these three aspects. We need to set goals to be evaluated from time to time. Necessary modification should be introduced depending upon the response.

The basic process of guidance for all children is the same. To cater to the needs of children with special needs, one requires additional tools in the form of functional assessment charts, information about various specialists services available, information about special teaching-learning material, information about support services from the Government, etc. Guidance services are to be planned around an individual as an integrated and inclusive part of the environment. We need to help the child to understand the society and environment wherever possible to enable him/her to be more rationale in his/her approach. We need to facilitate better understanding between the family and the child More often than not each of them tends to take a position and overlook each other's perspective. One needs to build emotional bonds with understanding. We need to understand the rights of children with special needs with respect to their schooling. This will play an important role in convincing the school management, teachers and staff to accept the child and take it with a sense of responsibility. We need to understand the extent to which we have to facilitate the child and not make him/her dependent. Once it is clear to us we can sensitise the management, teachers, staff and students with respect to requirements of children with special needs

Guidance to children with special needs with respect to vocation requires deep understanding of the strength of each child and job requirements of the vocation. The child needs to be guided to acquire necessary skills for the vocation through appropriate education and training. One need to be well versed with the list of jobs that each category of disabled person can discharge. We need to understand the leisure time requirements of such children and gather knowledge about various opportunities and facilities for it Guidance to children with special needs as to how to spend leisure time productively, which recharges an individual, is very important. Guidance has to play an important role to overcome any misapprehension or stigma that a child has. It helps in identifying one's own strengths and builds individual's personality around his/her strengths. The parents should be made an integral part of the guidance. This will not only make them aware about the rights of their child but also change their attitude towards him. Every aspect with respect to complex pattern of a children's personality is to be closely understood.

Guidance must ensure dignity of the child. One needs to understand uniqueness of each child We need to understand that a child's personality is composed of inherited factors and environmental factors. We need to be clear that guidance to the child is to be within the natural settings. We need to unearth inner potentialities of each child. We need to help him/her to identify his choice and make decision, which is most appropriate for him/her. The child should be encouraged to seek guidance at all stages of his life. Guidance is broadly in four areas: (a) Personal, (b) Social, (c) Educational, and

(d) Vocational. Personal guidance helps in overcoming the problems of lack of being wanted, jealousy among siblings, feeling of insecurity, feeling of helplessness, and other situations that disturb the mental equilibrium of your children. Some children find it difficult to cope with the class, teacher's behaviour, unfriendly atmosphere in the school, feeling of loneliness, inferiority, inadequacy, teasing by peer group, etc They find themselves in an environment, which is chaotic and full of despair. These problems need to be taken up.

Social guidance includes social needs to develop healthy relations with whom he interacts. This is a function of his /her experiences during his / her early childhood, his / her liking interests and attitudes, values and ideals, goals and aspirations, and the social environment he/she has been exposed to. Maladjustment in society is primarily due to maltraining and faulty handling by parents and school authorities. Guidance should aim at imparting personality traits like honesty, being cooperative, kindness, courage, loyalty, etc. among children.

Educational guidance aims at making best of the educational opportunities from school level to university level in accordance with the aim and interest of each child. It is helping the child to be successful in his/her educational career. We need to know how to cater to the special needs for the education of differently abled children. The child should be helped to make correct choice of the subjects. They be made aware of opportunities of subjects choice through National Open School/State Open School/ Indira Gandhi Open University /other distance education opportunities. The right choice of subjects with respect to goal, interest and aptitude of children with special needs is of paramount importance This will not only make them happy but also successful. Guidance needs to help these children to build a vision for themselves and make it a mission with burning desire Dream, desire, dedication and determination shall ensure success for children. Educational guidance has an important role to play in the developing skill of time management among children with special needs. They need to be trained in taking notes and planning their studies. Such children should be encouraged to participate in sports and recreation activities. They should be encouraged to participate in sports and recreation activities. They should be made aware of reservation of 3 per cent seats for them in all the courses. Often children with special needs feel that there is less number of alternatives. We need to impart that even though for others the opportunity may be more still they have to choose only one among the alternatives Nothing succeeds like success. Working on what children with special needs can do and making best of what they have shall provide immense happiness.

Vocational guidance or career guidance is helping an individual to choose an occupation, which is best for him/her. It includes assisting in making right choice, preparing, entering and sustaining in a vocation A thorough knowledge about vocational opportunities for people with special needs is very important to be able to provide guidance We need to know about the training opportunities, sources of credit, procedure for applying for various jobs, where to register for employment opportunities, what are minimum qualifications and skill required for a job, etc. We need to know the sources of this information and be able to guide such children how to go for them.

How to Provide Guidance

1. Establishing close relationship with the child
2. Helping the child to explore problem and communicate
3. Help the child to plan to solve the concern.
4. Helping the child to implement solution.
5. Follow up.
6. Deciding the point of termination beyond which the child does not need assistance.

Guidance at the Elementary Level

Elementary level is a phase of habit formation. It is a critical learning period during this stage with minimum efforts maximum learning takes place. It is an ideal phase to make children with special needs part of the group. Right attitudes can be imparted at this level. Personal guidance will ensure laying of right foundation. Social guidance at elementary level through co-curricular activities can build synergies between children with special needs and other children in the classes. Building of empathy can take place through play-way method. The understanding built at this level shall bear fruits in the long run

Educational guidance at the elementary level should ensure imparting of special skills like reading and writing through Braille and use of Taylor Frame to do elementary mathematics to child with visual impairment, basic sign language to child with hearing impairment, etc. Parents be imparted a dream for their children thereby they would feel motivated and chances of dropouts shall diminish. This stage lays the foundation and a subjectwise guidance is of paramount importance.

Vocational guidance at the elementary level involves primarily orientation about occupations. Promotion of activities with children would sharpen their psychomotor skill and dexterity They can learn doing things neatly and systematically. Vocational guidance also involves building spirit of cooperation. In Japan, children are provided with huge toys with the objective that child cannot play alone and seek the cooperation of his peer group and inculcate the habit of teamwork. Craft helps children with special needs in thinking creatively by making beautiful things from waste. Children with visual impairment learn new concepts like mountain, cave, shape of animals, etc. through clay modeling.

Guidance at the Secondary Level

In secondary stage child passes through physical, emotional, hormonal, sexual, social and other changes. These have direct bearing on the children with special needs. Personal guidance at this stage becomes very critical. Most children have very little knowledge rather are ill informed to face the situation The visually impaired boys need to be guided with respect to their mannerism The girls need to be made cautions of their personal hygiene. They tend to appear resentful and aggressive. This is because they do not get visual clues and need to be informed that their behaviour is hurting others. They need to be given more opportunities to express themselves. They need to be exposed to emotional situations with sound clues. Hearing-impaired adolescents tend to feel being excluded and doubting that people are talking about them. We need to face towards them so that they could do lip reading and catch our expression. We should express maximum through our body language that we care for them. We need to empower children with special needs to learn to take initiative and learn how to intervene into a situation. They are encouraged to learn maximum social skills with greater emphasis on communication. They are made aware of the expectations of society from them.

At the secondary stage the children with special needs grapple with the problems of adulthood. They are conscious about their appearance, money, health, and tend to impress others and hide their weakness. They try to experiment with smoking, sedating drugs, etc. They have a tendency towards socially undesirable behaviours. A comprehensive social guidance is very essential. There is an urgent need to utilise their strengths to look good and impress on others to overcome their weaknesses towards socially undesirable habits Children with special needs should be guided how to appear good and impress others besides motivating them to empower themselves to do more and more things independently.

At the secondary stage the children tend to be more independent resulting in establishment of new relationship between school and them. The role of parents tends to become secondary. The new relationship gives rise to new concerns. They acquire new interests and new bias in the form of liking and disliking. Flexible and dynamic educational guidance becomes very essential and the child needs to be taken into confidence with a view to help him to take the right path. Choice of subjects for children with special needs is very important at secondary level. Visually impaired children tend to give up Mathematics and Science at secondary level not being aware of its consequences. They need to be explained the importance of each subject before they finalise their decision. We need to make them feel that we have understood their points of view before we make them understand our views. The decision should be their own so that they own the responsibility of what they do.

At the secondary level children should be helped to known themselves through self-assessment inventories. This would make them aware of their abilities, aptitude, interests, personality, qualities and their strengths. The vocational guidance should make them aware of the world of work. They need to be provided with information about job requirements, minimum qualifications, skills required, emoluments, rules and regulations. They are trained to take decisions and shoulder responsibilities. They are imparted skills of organising and capacity building through teamwork.

Pre-requisites for Guidance Services

1. Adequate system of maintaining data and cumulative student record
2. Time-table should include periods for guidance activities.
3. School staff should be guidance-minded and be provided with literature on it.
4. Parents are guidance-minded and should be provided with literature on it.
5. School committee for guidance with Principal as the Chairman.
6. Planing and evaluation of guidance activities may be done.
7. Budgetary provision for guidance programme.
8. Feedback and modification of the programme from time to time.

To What Extent Children with Special Needs be Facilitated

1. Imparting of assistance which is essential like reading print for a blind child.
2. Assistance to go around in the school is withdrawn once the blind child is oriented.
3. No exemption in punishment for any indiscipline.
4. Treat the child with special needs as equal.
5. Child is allowed to do things independently.
6. Involve the child in all the activities.
7. Do not exempt the child for picnics or sports day. Create opportunities for him.
8. Child is praised publicly for the good work.

List of Myths, Superstitions and Wrong Beliefs

1. It is a myth that child with special needs is gifted with special powers and that when God takes away something it gives in another form
2. It is a myth to consider disability a punishment for wrong-doing in the

past. It is just a matter of chance that such thing has happened with the child.

3. It is a myth to believe that children with special needs are dull. Like any other child they are unique in themselves and need to be given opportunities for education and development.
4. It is a myth to believe that the children with special needs cannot become productive citizens and expenditure on them is just a waste of resources. There are many examples of such children becoming productive members of the society.

Guidelines to Physicians

1. Patient inflicted with disability be encouraged and guided to institutions working for the rehabilitation and education of children with special needs.
2. Parents of such children are encouraged to prepare a file of medical records and share the information with the resource personnel in the institutions for effective educational and rehabilitation of the child.
3. It should be ensured that critical learning period is not lost, as this is the phase where with minimum effort maximum results can be achieved
4. The treatment and education can go side by side.
5. Education and training help to overcome limitations to a large extent and empower the individual to become productive citizen of the country.
6. Patient should not be given false hopes of recovery, as at times it does more harm than any good.
7. Patients should be warned from misguided by quacks.
8. The patient should be explained the cause of his / her disability wherever possible, this helps in building understanding.
9. The patient is made to understand that his-her disability has nothing to do with punishment for his / her wrong in his / her previous births.

Guidelines for Teachers

1. Teachers have to play an important role in identification of children with special needs. Any deviation or poor performance of the child should be looked into The child could be child with special needs. Seek support of doctor to check eyesight, hearing capacity or any other difficulty that the child faces.
2. Make the child with special needs sit in the front near the teacher.
3. The child is introduced to the class with his/her name and telling about his / her abilities.
4. Students are sensitised towards their responsibilities through demonstration by the teacher's attitude towards the child with special needs.
5. Limitations faced by the child are diagnosed and suitable remedy is

suggested. Advice from experts in this case may be sought, if required

6. The child be involved in activities to the maximum extend and alternative ways of involving the child be evolved.
7. Parents be constantly contacted and informed about the progress of the child.
8. The child is publicly praised for his/her small achievements.
9. The child should not be exempted from punishment for any indiscipline.
10. The child is encouraged to have good diet.
11. The child should not be allowed to make excuses on the basis of his/her disability.
12. As the child participates and interacts with the peer group and the school environment his/her needs can be suitably identified. What is needed is that opportunities are provided and there is a positive attitude to understand the child and determination to ensure an environment, which is friendly.
13. In the school, the child with special needs will run, play, fight and is interested to know world around him/her. He/she should be allowed to communicate and we shall find that identifying his/her needs is a very simple exercise.
14. Many problems to educate the child can be taken care with innovative ideas like making use of clay modeling to teach concepts to blind students. There is a need to identify the interest of the child and utilise it to promote learning Learning is successful only when the child is made to actively participate and made to express.
15. We need to take advice of the experts with regard to aids that can be helpful for the children with special needs. There are low vision aids, hearing aids, wheel chairs, clippers, etc. which can improve the efficiency of such children
16. There are cases where the disability is progressive The teacher may seek medical advice in this respect and make suitable plans for the education of the child
17. Teacher can play an important role in explaining the special needs of the child to whole class and school. The need for white cane for blind child, hearing aid for hearing-impaired child, wheel chair for child with locomotor disability will help in building empathy. Engaging in simulative exercises will help in it.
18. At times children are reluctant to use aids. Engaging in activities where the aids become extremely useful will help to achieve the objective of making the child to use aids
19. Whenever child shows signs of dejection he/she should be assigned an activity, which can be done successfully, and be encouraged to gain confidence.
20. The missing experiences of such children should be supplemented

i e., a blind child be told about body language along with teaching certain important gestures, similarly hearing impaired child should be told about voice modulations along with establishing them with expressions

21. Children with special needs should be guided with regard to time management and planning tasks.
22 Children with special needs be guided to develop their personal hygiene and daily living skills
23. The teacher in close proximity with parents should guide the child what can be done and how it can be done rather than stressing on what not to do.

Guidelines for Management Personnel of Educational Institutions

1. Arrange for visits of specialists in the field of education in various areas of disability and holding of workshops with them.
2. Give exposure and training to teachers to deal children with special needs wherever possible.
3. Encourage parents and teachers to promote education of children with special needs.
4. Make school building disabled-friendly by making ramps and removing barriers, if any.
5. Sensitising staff and empowering them to guide such children wherever necessary.
6 Build an atmosphere of empathy rather than sympathy for such children

Guidelines for Students

1. Students with special needs should communicate about themselves clearly to teachers, parents and other concerned to enable them to understand their needs.
2 Students should work on themselves to build pleasing personality. They should keep themselves clean with neat hands, body and clothes.
3. Inculcate manners like greeting people, saying 'please,' 'thank you' and 'sorry' at appropriate places when required.
4. Students must do physical exercise and take balanced diet to build adequate strength in muscles and balanced body proportion. This will enable them to be active and effective in doing things by themselves.
5. Students should work hard to learn communication skills and interact with knowledgeable people and talk to them about their field of expertise. This will help them to understand more and more things.
6. Students with special needs should help others wherever possible.
7. Students should work with thinking how he can participate in various activities of the school and society.

8. Students should thing how they can do more and more things rather than getting upset about what they cannot do.
9. Students should draw happiness from what they have rather than being unhappy for what they do not have.
10. Students should not feel guilty for their physical impairment and should not take it as a punishment for past sins They should accept it as a challenge and persistently work upon making the environment friendly to their own needs.

Guidelines for School Staff

1. School staff is sensitised while introducing the child to the school.
2. Build empathy in the staff through simulative exercises and workshops.
3. Staff is made to understand that no obstacles be kept in the pathway.
4. Staff should be given training in handling of wheel chair.
5. They should be imparted awareness about human guide technique so that they can become positive contributors.
6. Staff should be informed not to give too much help and support the child to become independent.

Guidelines for Colleagues

1. Colleagues are empathetic.
2. They should treat the disabled colleague as equal partners.
3. They should communicate to build understanding.
4. Identify strengths of person with special needs and utilise them in discharge of day assignments.
5. Include the person with special needs in all discussions of family and office.
6. Colleagues can guide in devising ways to discharge various duties assigned to persons with special needs. The colleague should not take the responsibility on them and discharge it as it will never allow the challenged person to learn and grow.
7. Appreciate and encourage each other for every small success.

Guidance to Choose Vocation

1. We need to know the vocations that various categories of disabled persons are traditionally adopting as vocation.
2. We need to gather information about various vocations that have opened up in the recent past.
3. We need to identify new vocations that Physically Challenged persons can take up in light of developments in technology
4. We need to know various training facilities available in different parts of the country.
5. We should have information about the employment exchanges and Vocational Rehabilitation Centres and their procedures.
6. We have to gather information about various concessions and relaxations that have been provided by the Central and State Government.

7. Preparing a list of jobs for various categories of disabled persons. Collecting information about such list by the Government.
8. Helping the disabled persons to identify their own strengths and utilise the same for job or vocation placement.
9. Collecting and dissemination of information about vocational course be run by the National Open School, Indira Gandhi Open University, State Open Schools, Indian Technical Institutes and polytechnics where disabled persons are trained in gainful employment.

Guidance for Leisure Time

1 Collecting information about various games in which disabled persons participate and enjoy.
2. Having information about various Talking Book and Braille Book libraries and providing the same as and when desired.
3. Ensuring participation of children with special needs in cultural activities
4. Developing new hobbies in children with special needs.
5. Making children with special needs aware about leisure time activities and the need for taking rest to re-energise.
6 Guiding the peer group to involve children with special needs in their leisure time activities wherever possible.
7. Encourage such children to identify their interests and enjoy them.
8. Guide parents and teachers about the need of leisure time activities with special needs

Guidance to Develop Personal Skills

1. The children with special needs should be guided to become independent in their personal daily living skills. Such children should be encouraged to device innovative ways by which they can do things independently.
2. They should be guided about their personal hygiene.
3. They should be guided to be well dressed to become socially acceptable.
4. Such children should be taught about advantages of being neat and clean.
5. Guidance is important with respect to inculcating good manners.
6. Guidance to inculcate values and principles.
7. Guidance to develop communication skills

Guidance to Develop Professional Skills

1. Guidance to children with special needs with respect to professional approach towards vocation adopted.
2 They should be guided to work with determination, dedication and commitment to make a special place for themselves.

3. They may be guided to specialise in the area of their interest so as to draw maximum happiness from their profession.
4 They should be guided to upgrade their skills from time to time through training and reading about new development.
5. Guiding them to become abreast with latest happening in the market.

List of Special Aids and Skills for Children with Special Needs

1. Children with visual impairment be provided with aids like Braille slate, Taylor frame, abacus, brailler, typewriter, computers with screen reading software, tactile diagrams, tactile models, tape recorders, appropriate low vision aids, etc
2. Visually impaired children be imparted skills like reading and writing Braille scripts, use of Taylor frame and abacus, typing, use of computers, etc
3. Visually impaired should be imparted skills like orientation and mobility, where they learn to use white cane and build mental mapping skills to become more independent in their mobility.
4. Hearing impaired should be provided with hearing aids.
5. Hearing impaired students should be encouraged to learn communication skills, typing, printing, computer usage, etc.

Guidance for Slow Learners

1 Special remedial classes should be conducted.
2 In line with programmed learning assignments should be broken into small and simple units
3 Promoting mastery learning through sufficient drill work.
4. Frequently summarisation of important points should be done
5. Close supervision and follow-up of the child needs to be done
6. Audio-visual aids are used wherever possible.
7. More and more opportunities for creative expression are provided.
8. Diagnostic test is utilised and suitable remedy is implemented.
9. Courses and curricula be selected on the basis of aptitude, interest and need.
10. Vocational programme should not be forced.
11. Equality of opportunity in recreational programme, athletics, arts, dramatics, etc. should be incorporated.

Intervention Strategies for Developmental Dyslexia

Ashum Gupta*

Abstract

The paper discusses some of the intervention programmes aimed at teaching linguistic skills that are all important to be taught systematically for remedial reading. This can provide useful strategies to teachers for improving the academic achievement of the learning disabled students in the class

Key words : Learning Disabled, Dyslexia, Intervention Strategies.

INDEPENDENT, competent language processing consists of a hierarchy of lower-level skills required for higher-level processing. Confident, automatic language processing requires that all levels in the hierarchy function well. When any level in the hierarchy is missing or inadequately developed, the end result is incomplete processing. Top-down processes or compensatory methods may come into play, attempting to fill the spot left by the missing or incomplete part, but automaticity will not be developed In the hierarchy of lower to higher skills required, phonemic awareness is a key factor in word decoding (Lindamood, Bell and Lindamood, 1997). Much effort has been focused in the area of decoding. Errors in instruction such as teaching to a strength, or starting immediately with contextual reading,

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miss the concepts of lower-order cognitive processes required for higher-order cognitive processing in the final complex act of accurately reading and critically comprehending what is read. In the history of reading instruction, because the cognitive parts required to develop fluent decoding were not all identified, different schemes and procedures emerged that addressed parts of the process and ignored others. Some worked better with some students, some with others, depending on which processing levels students already had in place The question remained as to what were the underpinnings of decoding accuracy? (Lindamood, Bell, and Lindamood, 1997).

In order to read and write, children have to learn how to map the sound of the heard word, the sight of the written word and the articulatory sequence of the spoken word on to each other (Ehri, 1992). Additional codes have to be learned concerning segment of word sounds and word spellings, specific sequences of letters and their relation to speech sounds. Thus, both whole word and segmented codes are involved in the acquisition of written language, and the child needs to learn to relate these codes correctly to each other (Paulesu, Frith, Snowling, Gallagher, Morton, Frackowiak, and Frith, 1996).

Various intervention strategies can be devised to enhance reading and writing skills in children with dsylexia. Some of the intervention programmes are described in this paper The effectiveness of the intervention programmes is largely dependent upon the specific nature of reading difficulties identified in the children with dyslexia.

Phonemic Awareness Training

Many individuals who could not reach independence and competence in reading have a primary sensory-cognitive function — a missing part that is a much needed lower-level skill required for the higher-level task That missing function is phonemic awareness—the ability to identify individual sounds and their order within words. Learning to read and write involves learning the mappings between units in spoken words and units in printed words. For alphabetic writing systems, these units include phonemes and graphemes. Children must learn and use the link between the phoneme/m/ and the grapheme/m and the link between /ae/and a (Treiman, Berch, and Weatherston, 1993). The possible connection between phonemic awareness and literacy acquisition has been documented in dozens of correlational studies. However, direct evidence that phonemic awareness is a necessary precursor to success in acquiring the alphabetic principle is available only in carefully controlled training studies (e g., Bradley and Bryant, 1983, Byrne and Fielding-Barnsley, 1989, 1991, Lie, 1991).

Phonemic awareness, in its simplest form, involves knowing about sound patterns in words (as in rhyme and alliteration) In its more complex form, it involves the ability to play with sounds in words, that is, to segment, blend, delete, and insert phonemic segments (Stanovich, 1992, Yopp, 1988) It has been also demonstrated that the fundamental difficulty for dyslexia children lies in developing high-quality segmentally organised phonological representations of words (Fowler, 1991; Snowling and Hulme, 1989; Swan and Goswami, 1986), rather than in performance in phonological awareness tasks per se. It has been suggested that during linguistic development lexical items (i.e., words) are gradually restructured from initially fairly holistic representations into representations that are increasingly detailed and organised segmentally, with the organisation narrowing from the level of the syllable to the level of onsets and rimes and finally to the level of phonemes (e.g., Walley, 1993) This gradual lexical reorganisation and restructuring may be significantly helped by learning to read, particularly in terms of reorganisation at the phonemic level (e.g., Morais, Alegria, and Content, 1987).

According to a phonological representations' account of the phonological deficit in dyslexia, dyslexia children may be delayed or handicapped in developing high-quality phonological representations and in restructuring those representations at the different linguistic levels, and their reading difficulties may contribute to this developmental problem (Swan, 1995). Relationship between phonological awareness at the different levels and problems in reading and spelling could differ depending on the phonology of the language that is being learned and the orthographic units that this phonology makes salient (Goswami, 1997). If the reading difficulties of children contribute to their difficulty in restructuring their phonological representations, particularly at the phonemic level, then this process of restructuring should be easier in transparent orthographies in which the decoding process is straightforward (like Dutch, Hindi and German) than in less transparent orthographies (like English) in which the decoding process is less straightforward. In English, the use of 1.1 mappings between letters and sounds only sometimes leads to accurate decoding (Goswami, 1997). In a transparent language like Hindi as in Dutch and German one may find that the process of restructuring is relatively easier. It could be expected that the very transparency of Hindi orthography can enable the dyslexic children to have better conscious access to phonological structures at the phonemic level. By training such children to gain conscious access to the basic phonological structures, they can be helped to improve the quality of initially inadequate phonological representations and their process of sublexical reorganisation could be facilitated

In training studies, dyslexic children are taught how to segment and blend phonemes in spoken words. The effect of the training on their later ability to acquire reading and spelling skills is then compared with that of untrained peers. The effects of phonological awareness training appear to be strongest when letters are introduced simultaneously with the sounds (Bradley and Bryant, 1985). Positive effects of phonological awareness training were also reported by Torgesen, Wagner and Rashotte (1994) who found that the trained group outperformed an untrained group on a segmentation task However, the authors found a substantial variability in response to the training; even after training, about 30 per cent of the children in the trained group were practically unable to segment words

Phonological Analysis and Blending Training

The phonological analysis and blending training programmes train such skills at the oral level and in the context of print presentations and direct teaching of letter sound and letter-cluster-sound correspondences. In all direct instruction programmes, content is introduced in a highly structured, carefully graduated sequence of steps, with multiple opportunities for overlearning of all content and skills Cumulative review routines, massed practice, and teaching of all component skills to a defined mastery criterion are all defining design features of the direct instruction approach. In teaching phonemic segmentation, the trainer trains the child to say each sound in a word slowly, one at a time, in a left-to-right order. Sound segmentation training requires that the child hears the individual sounds in words and develops an awareness of subsyllabic units within spoken words. Blending training teaches the child how to combine individual speech sound to form words The children are taught to recombine or blend the sounds into a word at its normal spoken rate. All sounds are taught than a simultaneous manner, to ensure that every child gets sufficient opportunity to acquire and individual letter sounds. Letter-sound training emphasises small units and individual sounds within words, with some use of rhyming to allow a small amount of subsyllable segmentation at the level of onsets and rimes. Rhyming is used to allow blending of stop consonants (e.g , c-at, d-ear; g-ear) and to facilitate some degree of generalisation and transfer (Lovett, Steinbach, and Frijters, 2000).

In their study, Lovett, Steinbach and Frijters (2000) classified children with reading disabilities into three groups double deficit group, phonological deficit group and visual-naming speed deficit group. Following 35 hours of word identification training, sizable gains and significant generalisation of training effects were achieved by all subgroups. A metacognitive phonics programme resulted in greater generalised effects across the domain of real English words, and a phonological training programmme produced superior outcomes within the phonological processing domain. The results clearly indicated that the core deficit of phonological awareness is amenable to focused and intensive remedial effort

Word-identification Strategy Training Programme

Word-identification Strategy Training (WIST) programme devised by Lovett, Steinbach and Frijters (2000) instructs children in the acquisition, use and monitoring of four word identification strategies. The four decoding strategies are : (a) word identification by analogy, (b) seeking the part of the word that you know, (c) attempting variable vowel pronunciations, and (d) peeling off prefixes and suffixes in an multisyllabic word In the word identification by analogy strategy, the children learn to compare an unfamiliar word to a familiar word. Rhyming and the abstraction of rime patterns are the basis for word identification by analogy. In seeking the part of the word you know strategy, the child is taught to look for small words or word parts that he or she does know. Instruction on the vowel variations strategy emphasises the importance of flexibility in word identification. Children learn to apply different vowel pronunciations in a new word. The fourth strategy, the peeling off strategy, is a decoding strategy that can be applied to most multisyllabic words The WIST programme focuses on explicit training of the four strategies and extensive, dialogue-directed practice with their implementation The programme also teaches a system of metacognitive mnemonics to help the children acquire general routines useful to effective strategy application and evaluation

Cognitive-Process Based Training

Cognitive-process based training for reading difficulty has been emphasised upon by several researchers (e.g., Wong, 1992) as reading has several component processes The major deficit as found by many researches is phonological processing deficit which itself can be related to a basic cognitive process Samuel and Miller (1985) discussed the role of attention, visual memory, phonological memory and semantic memory in reading difficulties. According to them, absence of automaticity in decoding is the main deficit. Because of this, the attentional system is overloaded, heavy demands are placed on memory, and comprehension is adversely affected Thus a remedial programme should be focused on developing automatic decoding Rapid sequential naming exercises have been recommended for this purpose However, the emphasis on decoding without comprehension during the training programme may have a limited effect as it would not take into account the roles of context and inferencing when words occur in a text (Das, Naglieri, and Kirby, 1984).

Dass, Mishra and Pool (1995) attempted a cognitive remediation of decoding deficit based on theoretically based programme, the PASS Remedial Programme (PREP). The PREP provides 10 structured tasks that they aimed at developing internalised strategies for mainly successive processes (6 tasks) and simultaneous processes (4 tasks). Deficits in either of two may lead to poor decoding. Through its 'global process' training and curriculum-related 'bridging' training, PREP facilitated application of internalised strategies arrived at inductively for learning word decoding and spelling The findings indicated that the largest improvement in word decoding occurred for the PREP combined global and bridging treatment.

Strengthening the Orthographic-Phonological Codes

Some of the intervention programmes have been grounded in the Multiple Connectionist Model of Reading Acquisition (Berninger, 1988) which has specified four connections between visible language or orthographic codes and oral language or phonological codes; whole word-phonetic code, whole word-semantic code, letter-phonemic code, letter-cluster-syllable/rime code (Berninger, 1991) The first two orthographic-phonological code connections are considered direct mechanisms or word-specific mechanisms, whereas the last two orthographic-phonological code connections are considered indirect mechanisms or rule-governed mechanisms in lexical access (Barron, 1986) The intervention is aimed at strengthening the orthographic-phonological codes so as to remediate reading. While reading non-words requires rule-governed mechanisms (phonics and /or orthographic rules), word-specific mechanisms (paired associate between a whole written word and a spoken name code) are needed for rapid, automatic reading on the word recognition tasks Training strategies thus can be devised to improve the phonological and orthographic skills.

Intervention strategy can be planned in order to strengthen the association between the orthographic image of a whole written word (Ehri, 1980) and its phonemic or name code. The technique used is to draw the child's attention to the spelling pattern of the whole word and thus strengthen the orthographic image of the word through the act of breaking it down to each letter in sequence and learning the phonemic analysis and phonetic skills by pronouncing each letter of the word and then blending the sounds to make it a whole word.

In an intervention programme used by Berninger et al. (1991), the steps involved asking the child to (i) say the word or repeat the word provided by the trainer (i.e., supply the phonetic or name code) ; (ii) orally spell the word (i.e., attend to single letter codes and spelling pattern for whole word); (iii) produce the sound for each letter (i.e , supply phonetic codes);

(iv) blend sound to produce a synthesised word (i e., supply syllable codes and intonational contours); (v) use the word in a meaningful context.

Impaired phonemic skills can be remedied by strengthening the orthographic-phonological codes (Berninger, 1991). According to Velutino (1979), dyslexia is a language disorder requiring language-based interventions Teaching of phonemic analysis, phoneme segmentation skills and blending skills are all very important to be taught systematically for remediating reading. A model proposed by Caramazza, Miceli, and Villa (1986) emphasised that both the graphemic buffer and the phonological buffer contain lexical (whole word) and non-lexical (smaller than the whole word) representations The full lexical access process requires the orchestration coordination of both the lexical and nonlexical representations (Berninger, 1989).

Reading performance can be improved by teaching intervention strategies aimed at strengthening the connections between sound of the heard word, the sight of the written word and the learning if specific sequences of letters in a word and their corresponding sound and graphic features. Suggestions of how mapping from one code to another might be learned have been proposed in connectionist terms by Seidenberg and McClelland (1989) who have proposed that the presence of weak connections in a simple artificial neural network for translating print to sound can simulate the symptoms of dyslexia. During the speech development, children learn how the speech they hear maps into the utterances they produce. The efficacy of the mapping depends on the degree of connectivity between the relevant language areas in the brain. Weak connectivity between brain areas involved in hearing words and saying words will not only cause delay in establishing different language codes, but will also cause difficulties in learning an alphabetic code. Successful use of the alphabet, in particular, depends upon precise and redundant mappings between individual graphemes, phonemes and whole word spelling and sound (Paulesu et al., 1996).

Retrieval, Automaticity, Vocabulary Elaboration, Orthography (RAVE-O) : A Reading Intervention Programme

Wolf and Bowers (1999) have articulated a reconceptualisation of dyslexia, the double deficit hypothesis, to emphasise the special roles that core deficit in processes underlying naming speed and underlying phonology play in reading failure. Improvements in decoding and word reading accuracy have been far easier to obtain than improvements in reading fluency and automaticity (Lyon and Moats, 1987). The word fluency has been referred to the acquisition of smooth rates of processing speed in reading outcomes. The word automaticity is used to mean a continuum in which processes are considered automatic when they are fast and autonomous and require only limited use of cognitive resources (Wolf, 1991). The goal of the RAVE-O programme is the development of fluency in reading outcome behaviours, including word identification, word attack, and comprehension, RAVE-O activities emphasise the development of increased processing speed or automaticity in such underlying component skills as (a) vision-related processes such as left-to-right scanning, letter recognition, and in particular, orthographic pattern recognition, and (b) auditory processes that include faster initial and final phoneme and rime identification. At the lexical level, the programme places simultaneous emphasis on more fluent lexical retrieval skills alongside directly instructed semantic development. The combined emotional and motivational components that contribute to a changed attitude toward learning to read are integral to the RAVE-O structure The programme's intensive small-group, pull-out approach allows teachers to build an environment that fosters the growth of new skills and discover new strengths.

Multisensory Teaching Techniques

According to Samuel Orton's theory, dyslexia is caused by neuropsychological-based disabilities that may be helped by multisensory teaching techniques that provide linkages between the visual, auditory and kinesthetic senses. A multisensory method called the dyslexia training programme (DTP) for promoting reading in students with reading disabilities has been built upon Samuel Orton's theory. The DTP, a recent adaptation of the Alphabet Phonics curriculum also has its origins at Scottish Rite (Beckham and Biddle, 1989) The DTP core curriculum provides a cumulative series of 350 one-hour lessons starting with very basic abilities (e.g letter recognition) and extending sequentially to sophisticated levels of linguistic knowledge. Students are also taught an extensive vocabulary to apply to their language learning code marks that indicate speech sounds, symbols plus abbreviations related to word decoding and formulas for syllable division and spelling. Reading comprehension intervention begins after decoding skills have reached a minimum level of accuracy and automaticity. A videotaped version of the DTP is also available and has been well received by educators and parents A few studies on the programme have shown that it holds promise for improvements in reading and spelling when implemented in both individual and small-group setting (Clark, 1988; Hutcheson, Selig, and Yong, 1990). Oakland et al. (1998) used the DTP programme for dyslexic children. Following the two year programme, students displaying dyslexia demonstrated significantly higher reading recognition and comprehension compared with a control group.

The Vygotskian Tradition, its Implications for Remediation

The influential work of Vygotsky has emphasised that learning is a collaborative effort. According to Vygotsky (1978) what children can do with assistance of others might be in some sense even more indicative of their mental development than what they can do alone. "The tradition of Vygotsky has influenced the mediated training and dynamic testing approaches. Feurestein (1979) attempted to remediate deficits in intentional learning by an interactive instructional procedure. Vygotsky's two major concepts relevant to mediation are internalisation and sociocultural mediation. Whenever children are given instructions either through instructors, or reading from books, children have to understand their meaning, become familiar with them so that the instructions become part of their own thinking. The point of interest for remedical instruction is the quality of internalisation. What contributes to the quality is reflection on the material of instruction Without reflection, it will be only rote memorisation and there will be no transfer of learning. Further, the context of learning is provided by the symbiotic relation between personal characteristics and social milieu.

The Issue of Transfer

Strategy training is not enough unless we teach where to use what strategy. Das, Naglieri and Kirby (1994) suggested that in process training the behaviour targeted for transfer is to be guided by principles or rules that have been learned Transfer of principle can be facilitated only when the subject has acquired the principle through his/her own experience. Learning is collaborative, that is, medicated, and requires internal representation, which involves transitions from intermental to intramental representations. Such learning facilitates inductive rather than deductive inferencing. Thus intervention programmes need to be structured so that inductive inference will occur spontaneously. The transfer can be brought about by varied and extensive practice in different contexts so that the action becomes so automatic that in similar situations only minor modifications are required. The aim of all cognitive strategy training is the transfer of principle which would entail abstraction and reflection. This would require a lot of effortful processing.

Self-monitoring Interventions

Self-monitoring is defined as occurring when an individual assesses whether or not a targeted behaviors has occurred and then records the result in some manner (Nelson and Hayes, 1981). Two types of self-monitoring are generally used. The first is self-monitoring of attention (SMA) which involves instructing students to self-assess whether or not they are paying attention and to self-record the results when cured. The second type of self-monitoring intervention, self-monitoring of performance (SMP), involves instructing students to self-assess some aspect of academic performance and to self-record the results (Reid, 1993). The value the individual attaches to a targeted behaviour may directly affect self-monitoring outcomes. Students' self-observations and perceptions of which behaviors constitute academic competence change as they mature (Paris and Newman, 1990). Hallahan and Loyd (1987) suggested that because self-monitoring can increase the amount of time a student spends on - task, this may in turn create a more positive environment for the child. Researches have shown that self-monitoring is socially valid and can be readily incorporated into the classroom regimen. Many issues that have practical impact on implementing self-monitoring in the classroom, such as developing new assessment procedures, the effects of different means of self-recording and the use of self-monitoring in group work need to be addressed (Reid, 1996).

Conclusion

Intervention research on dyslexia has clearly demonstrated that reading acquisition deficits can be effectively remediated. Significant gains can be obtained in word identification skills and letter-sound knowledge following well-defined and focused remedical treatment. There is convincing research evidence that phonological decoding skills are amenable to focused and intensive remedial effort. Whether the core deficit in visual naming speed will prove as amenable to treatment as the phonological deficit has not yet been thoroughly investigated. There appears to be increased interest in the treatment challenges posed by the visual naming-speed deficit and in the ultimate goal of improving reading skills past an accuracy to an automaticity criterion of acquisition (Torgesen et al., 1997). Interventions need to be planned keeping in view the context of learning. Intervention programmes need to be structured so that inductive inference will occur and through extensive practice in different contexts transfer is possible. Such initiatives will represent progress conceptually and therapeutically for individuals with different profiles of processing deficit and reading disability.

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Various Modes of Education of Visually Impaired : A Comparative Evaluation

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Abstract

The study attempts to evaluate educational management system for the visually impaired by conducting an extensive review of literature and evaluation of different modes of education. It seeks responses of leading educators and administrators for their performance evaluation in terms of coverage of special groups, social integration, speed and accuracy of Braille, social maturity and concept development. This will provide rich insight to the institutions providing education to the visually impaired.

Key words . Visually Impaired, Social Integration, Integrated Education.

THE study attempts to evaluate education management systems for the visually handicapped by conducting an extensive review of literature, questionnaire based evaluation of different modes of education, seeking responses of leading educators and administering a structured questionnaire to 130 visually impaired children for their performance evaluation in terms of coverage of special groups, social integration, speed and accuracy of braille, social maturity and concept development. A summary of the main findings is presented below.

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Economic Viability

The study establishes that investment on education constitutes an important form of investment in economic development which would result into adequate returns and that justifies promotion of education and training of disadvantaged groups. Such investment is also justified from the point of view of economic growth, its economic gains, its effect on quality of life, human capital, incremental earnings, and equity and social justice. Integrated education emerges economically more viable as compared to residential as well as semi-integrated education due to lower investment, its cost effectiveness, and social desirability.

The direct allocable per capita expenditure on integrated education is Rs. 2,200 which is lower than one-fifth of such expenditure of Rs. 9,760 on residential education. As with the same amount nine students may be covered under integrated education as compared to two of them under residential education, it renders the former mode of education comparatively more cost effective and economical.

Growth Period

The origin of residential schools in Gujarat may be traced to the year 1900; semi-integrated education to 1963; and integrated education to 1981. Integrated education witnessed consistent growth during 1981 to 1990, whereas residential schools from 1962 to 1975. The latter has remained stagnant for the last 20 years and the former has revealed tremendous potential for growth. During the period of research study (1989 to 1992), residential schools registered an annual growth of one per cent which is insignificant as compared to that of 26 per cent in case of the latter.

Limited Coverage

The estimated population of the visually impaired in the country is 13 million with 11.05 million (85%) curable and 1.95 million (15%) incurable. The existing 225 to 250 residential schools cover 12,500 children (5%) and integrated and semi-integrated education projects cover another 5,000 children (2%) of estimated 2.5 lakhs school-age blind children. Thus 93 per cent blind children have no scope for their whatsoever education at present.

Coverage of Special Groups

Integrated education is most effective in respect of coverage of special groups which are not being adequately covered under other modes of education.

Gender Discrimination : Enrolment of blind girls in residential schools is comparatively lower as compared to that of integrated education which extends almost equal opportunities to the boys as well as girls with no evidence of gender discrimination. The overall performance, however, reflects discrimination with a marked preference for boys as for every even boys, only three girls have been enrolled.

Age Group : Integrated education in more effective than residential education in respect of coverage of younger children which in turn is more effective than semi-integrated education in this respect

Congenital Blind . Integrated education is more effective than semi-integrated education which in turn is more effective than residential education in this respect

Occupation : Integrated education is most effective in attracting children from farming community, whereas residential education in respect of children from service class.

There is no significant difference between three modes as regard coverage of students from different castes and those who had availed or had not availed treatment at the time of onset of blindness.

Social Integration

Semi-integrated education emerges as the most effective with regard to the acceptance of visually impaired pupils among friends in general and the sighted friends. Residential education emerges as the most effective in respect of acceptance of visually impaired children among other like students and the neighbours; as well as performance of passive or active activities. Integrated education emerges as the least effective in respect of almost all the indicators of social integration.

Collective System Failure

On review of historical, social, administrative and financial perspective of each mode of education, it is observed that it was due to feelings of pity, compassion and charity that residential schools were established and supported. Similarly, to enhance the quantitative coverage and to improve the extent of social integration, both integrated as well as semi-integrated education were initiated. The study establishes that all these modes have generally failed individually and collectively to achieve the objectives of quantitative coverage as well as qualitative educational inputs leading to comprehensive development of blind students.

Limitations of Residential Schools. The study establishes that residential education is not suitable for mass coverage of blind children as it is very expensive and results into their isolation. Other major impediments in this case are stagnant enrolment of students, declining teacher-student ratio, charitable outlook and lack of vocational training.

Limitations of Integrated Education: The major stumbling blocks in case of integrated education are lack of requisite qualification of the itinerant teachers, extremely poor quality of braille reading and its failure to enhance social integration. These factors results into extremely poor quality of integrated education.

Failure of Integrated Education

Integrated education has failed to improve conceptual understanding and concept development among visually impaired children. Even in respect of social maturity, it has no in-built advantage over other modes of education. The quality of integrated education in terms of speed and accuracy of braille of the pupils and that of qualification of teachers is comparatively inferior. In respect of all the four parameters of social integration, speed and accuracy of braille, social maturity and concept development, it emerges as the least effective as compared to the other modes of special education.

The research study disproves the claim that integrated education is more effective than residential as well as semi-integrated education in respect of promoting social integration, enhancing social maturity, developing conceptual understanding and concept development among the pupils.

Scope for Improvement

The study proposes that educational services under all the three modes of education need to be improved. The deciding factors for selecting a particular mode of special education should, however, be the individual needs and location of the child. The guiding principle should be to extend educational opportunities to a child according to his individual felt needs and other physical, environment and socio-economic constraints.

The quality of itinerant teachers, regular teachers and the extent of support services need to be improved to enhance the quality of integrated education. There is scope for improving facilities at residential schools which should be managed as educational institutes and not as charitable entities

Selective Educational Placement

The study establishes that each mode of education has specific advantages for selected blind children and no single mode meets the needs of all such children optimally Consequently, special educators support selective educational placement which considers felt needs of each blind child and the quality, extent, nature and proximity of availability of educational facilities while selecting a mode of education.

Most Ideal Approach

The study reveals that integrated education has not delivered the desired results as regard enhancing coverage, promoting social integration, and achieving quantitative and qualitative progress Similarly, residential education has not proved very effective in respect of quality of braille, self care and other mode-specific aspects. The study establishes that the only viable option is promoting all modes of education as complementary and supportive to each other.

Role of Residential Schools

The study proposes that residential schools should admit only such children who can not otherwise be enrolled under other modes of education due to the extent of disability, their geo-scatter, non-existence of integrated education and such other reasons The schools should also become the preparatory centres for preparing blind children for integrated education For the severally handicapped and multi-handicapped and such other children, residential education is the only panacea.

Role of integrated Education

It should expand its services in the areas of child screening, eye check-up, refraction, early identification, early intervention, child and family counselling, promotion of comprehensive eye care among children, evaluation of children for deciding appropriate mode of education for each child, providing low vision aids and large print books, promoting pre-braille services and enhancing integration among the children of residential schools as well.

Futuristic Approach

The study establishes that no mode of education emerges as a panacea to the problem of limited coverage and far from satisfactory quality of education. It concludes that education programme should be fitted to the child and not the child to the programme

The study proposes that the only viable and practical option for the future would be promoting education of the visually impaired like that of any other child; involving regular schools for extending them regular educational facilities; bringing special education under the umbrella of regular educational system; and thus enabling a blind child to seek admission to a nearby regular school merely as a child—and not as a special child.

A blind child should face the school environment and to be exposed the same educational curriculum like any other child. He should have access to the child preparatory services and special educational and mobility material. In other words, education of the disabled should be handled by the regular schools without the education or the education being 'special'

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Spastic Children and their Families

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Abstract

The paper highlights the crisis that the family goes through when the parents learn for the first time that the child is different and the child will have several limitations in different aspects of life. The study is based on intensive interactions of the authors with the parents and other members of the family, observation, session and reflective interviews with the mothers of the children. After going through the cases the authors have found that spastic children are like other children in many ways and they have emphasised the need for inter-familiar relationship to provide security to such children. This paper can give insights to the teachers so that they can intervene and provide help to parents to provide support to their children

Key words · Spastic Children

EACH child is just about the kind of person that would be predicted from the knowledge of the way his parents treated him".

'Happy childhood memories', 'Family festivals' ' Special dinner,'

'My birthday party,' holiday, outing and so on

For many people, these phrases and words trigger pleasant thoughts about their family. For others, no such memory exists even. For some, only stressful moments, conflicts and frustration recreate those hours of agony when one looks back. This is true for any one of us whether we accept it or not. Is there any special

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family dynamics for children who are different, whose needs are sometimes too challenging for their parents? How do the parent and other family members bear the moments of happiness and sorrow together? Do these families have a close-knit bonds or do they suffer from inner conflicts, dilemma and frustration?

Fraber (1975) has pointed out that the presence of a child who is challenged often represents a delay in family evolution Family development gets desynchronised and passes through the following crises : The first crisis occurs when the parents become aware that their child is different; the second when the child begins receiving services, the third steps is when the child leaves home and school; and the fourth, when the aging parents can no longer care for their offspring. The strong feelings that overcome parents following the birth of a spastic infant is tied to the loss that they feel has occurred. It can be equated to the loss of a loved one.

In a bid to understand the families of children with spasticity, the authors undertook a multicase study involving the families of these children. The study is based on intensive interactions with the parents and other members of the family, observation, photo session and reflective interviews with the mothers of the children. In all, five families were identified for the proposed study.

Is it really so? Or in Indian families, we get a different picture.

Important Findings

Most important finding of the study is that "Each family is unique as each child in the study is unique " Each family reflects its inner strength in its unique way and attempts to conceal inner contradictions. But some families have helped in reinventing human values, love and care which are disappearing very fast in today's society. It is really fascinating to meet Mohan who is one of the three children, where mother is the bread-earner of the family. Mohan being the first child, their shock was a bit too much to absorb. His other two siblings—one sister and one brother—are educated and competent But that never deferred Mohan to be left behind After his schooling in Balwant Rai Mehta school, and SSNI, Hauz Khas, New Delhi, he successfully completed his Class X from National Open School. He is now working in Vishwakarma Training Centre of SSNI. He is confident and can do his personal jobs independently; these include money transaction in the bank and post office and going to his job place all alone in D.T C. buses In fact, he feels responsible for the family as he is the eldest. The mother seems to be very close to Mohan. But there are undercurrent of jealousy also in the family. Mohan shares a love-hate relationship with his siblings. The siblings make an alliance and leave Mohan all alone on many occasions. Perhaps, this particular behaviour of his siblings makes him feel lonely and he craves for companionships though not sure about his future plans.

In contrast, Madhumita reflects an image of total dependence both physical as well as emotional. She even needs assistance for all her personal works. She prefers staying back at home and keeps herself engaged in watching TV. Interestingly, she is the centre of all thoughts and activities of the family though she is having two brothers and one sister-in-law. She gets maximum attention from her elder brother whose recent marriage has created a lot of undercurrent of jealousy and conflicts in the family Madhumita finds its terribly difficult to accept her sister-in-law. Because of her presence, she has started losing her confidence and self-concept. In fact, her mother reinforces her feelings and thoughts about this new entry in the family It is disturbing also to note in different situations that Madhumita's parents have no confidence in her abilities unlike that of Mohan.

In case of Rishav, things are very encouraging. An extended family set-up with grand parent and a full time servant, the environment is very positive for his growth and development. His mother being a teacher and an active member of Handicapped Children Parent's Association, gives Rishav enough psychological space to grow up. Rishav is in SSNI and might be shifted to any of the reputed mainstream schools. He reflects very positive attitude towards himself and lots of self-confidence He always participates in co-curricular activities, hobby classes and is aware of current affairs in national and international scenario. What do we learn from the above three cases?

The spastic individuals are as normal as any other individual from the point of view of love, sensitivity, care and sociability. Parental and familial love, care and confidence in them help them perceive and experience personal significance, meaning and purpose of life.

The intrafamilial relationships, communication patterns and emotional bonding between family members are essential and play an important role in the nurturance of self-concept, attitudes and the overall personality of an individual.

If one is secure and feels secure, one is confident of stepping out of the cocoon to see the life, feel the pulse of the world and explore the possibilities of the future.

Hence we end with positive note : 'Mom! Help me! I can do also!'

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Multi-category Teacher Training Programme

A Viable Approach for Mass Implementation of Integrated Education for Disabled Children

Janak Verma*

Abstract

The paper attempts to evaluate the Multi-category Teacher Training Programme (MCTTP) initiated by National Council of Educational Research and Training (NCERT) in the year 1989-90 with the assistance of UNICEF through survey of the responses. It reveals that most of the teachers from Regional Institutes of Education (RIE) feel that training programme should continue as MCTTP is very important and useful for meeting the individual needs of the children in the classroom in regular schools

Key words : Multi-Category Teacher Training, Integrated Education.

THE National Council of Educational Research and Training (NCERT) has initiated a multi-category teacher training programme (MCTTP) in the year 1989-90 The programme was started with a view to prepare teachers, trained in all disabilities instead of single disability. This model delivery (MCTTP) has emerged from UNICEF assisted Project Integrated Education for Disabled (PIED) blocks. This was the modality which required to be expanded for the implementation of centrally sponsored scheme of Integrated Education for Disabled Children (IEDC) Since it was to be mass implemented, therefore, the NCERT took over the responsibility for institutionalising the MCTTP with its Regional Institutes of Education (RIEs). It was thought to evaluate the programme so that we can get the

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feedback for the betterment of the programme in terms of its usability and replicability The programme was meant for in-service teacher education. In all 260 in-service teacher educators were trained in four RIEs of Rajasthan, Mysore, Bhubaneswar and Bhopal Out of these 131 teachers responded to the questionnaire which was prepared for the evaluation of the training programme.

Evaluation Tools

An evaluation tool was developed in a form of questionnaires 1 and 2. The questionnaire 1 was meant for the trainees which contained 51 items and questionnaire 2 prepared for the organisers consisted of 36 items The basic idea was to get the feedback about the training programme, its content, the process, i.e , methodology for transacting, the training programme, the materials provided for the training programme, and its outcome. The percentage for each item was calculated and content analysis was done for each response.

Outcome

The training programme was developed for teachers to achieve different competencies related to teaching and management of special need children in the classroom. Various skills developed during the training programme were · curriculum adjustments and adaptations for special need children, daily living skills, capabilities for use of various aids and equipments for teaching and management of special need children, capabilities for the development of language skills, lip reading and auditory training, skills for behaviour modification, remedial teaching, placement of children according to their capabilities, arranging suitable facilities like using appropriate teaching aids, orientation and mobility skills, identification and assessment of disabled children and use of appropriate creative activities for these children.

Competencies which have not been achieved are use of audio meter, provision of unique curriculum for learning disabled children, mentally retarded children and multiple handicapped children, use of speech trainer, maintenance and simple repair of these aids, helping general teachers to keep special aids and equipments in functional use, use of braille kit at reading level, use of mobility aid and guide general teachers to use these aids.

The extent to which the objectives of the training programme have been realised were assessed by 22 statements. These statements were made to know as to what extent the teachers have acquired these competencies. Their opinion was sought on a five-point scale from A to E. These statements represent the level of achievements attained by the teachers.

The competency achieved fully by teachers in all the four RIEs were: "can identify children with special needs and assist them to help themselves," "can interact with the parents," "can convince the general teachers about undertaking special education for the disabled children," "can interact with the children", "can develop and maintain a resource room for a cluster of schools," "can provide unique curriculum required for meeting special needs of children in a cluster of primary schools for orthopaedically handicapped children," "can use special aids and equipments required for special need children," "have ability to interact with community for advocacy and support," "can use abacus effectively," and "can use braille kit for writing "

The salient per cent features of the evaluation of the training programme had been that 100 per cent of the teachers from Regional Institute of Education, Mysore were in favour of the continuation of this training programme. Ninety two per cent of the teachers from Regional Institute of Education, Bhopal, 89 per cent of the teachers from Regional Institute of Education, Ajmer also wanted to continue this training programme. The justification for its continuation in their opinion was the availability of trained teachers to achieve the goal of Education For All (EFA) by bringing the disabled children to the fold of general education system They were of the opinion that by this training programme, they can become resource teachers, and become more confident to teach the special need children, the attitude of the teachers is changed for disability and the disabled children. It helps in understanding the various problems of the disabled children and the methods to solve these problems and disabled children can be made independent by this training programme. It can be seen from the following table.

Do you want the programme to be continued as it is for other teachers? if yes, give justification.

Regional Institutes of Education (RIEs)	Percentage of trainees who were in favour of continuation of the programme	Justification for its continuation
Ajmer	89%	1 By this training, teachers can be more confident to teach the disabled children and they can become resource teacher to be placed in general schools.

		2 The goal of integrated education can be achieved. 3 By this training programme, the attitude of the teachers is changed for disability and the disabled children
Mysore	100%	1. The availability of trained teachers to achieve the goal of integrated education for the disabled children 2. By this training, the teachers can have practical experience to handle the disabled children 3. It helps for better integration. 4. This is the only way to meet the target of Education for All.
Bhubaneswar	89%	1. The teachers will be able to attend the disabled children more effectively in general classrooms. 2. This will promote good cooperation and understanding among teachers. 3. This is very good programme for preparation of resource teachers
Bhopal	92%	1. It helps in understanding the various problems of the disabled children and the methods to solve them. 2. By this training, the teachers are able to tackle the problems in integrated set-up. 3 This will lead to social and educational upliftment of the disabled children. 4 Disabled children can be made independent

On asking what improvement would you like to suggest in terms of content of the training programme, the process, the organisation and the evaluation. The meaningful suggestions which emerged can be seen in pages 72, 73 and 74.

Conclusion

The above analysis shows that the multi-category teacher training programme is a very good programme for mass implementation of integrated education in regular schools. This training course is a must. Because we need to provide support of a resource teacher, a teacher who is trained in more than one disabilities, to cater to the needs of children with different types of special needs in regular schools. Regular schools are open for all children. These may include children having different types of disabilities. Some of the children may have mental retardation, a few may have speech and hearing problems, still another few may have low vision, and some of them may have learning disabilities. We cannot afford to provide support of so many trained teachers in one school. Instead, one teacher who is trained to cater to the needs of all these children will be a viable option. Multi-category teacher training programme is one of the options which is economically viable to address the needs of different types of disabled children.

However, the above mentioned training course needs revision in the light of the findings of present study. Two major issues emerged out of this study. One, that the training course should have more practical inputs as after undergoing the programme the teachers need to develop certain competencies to deal with the education and rehabilitation of the children with special needs, develop skills to use different aids and equipments and their maintenance so that their needs are met in the general education system. Two, that the training course should be imparted in regional languages as it is meant for the primary teachers. Since the primary teachers are involved and they have to deal with children even at the far-flung remote areas, training should not be conducted in a foreign language, a language which they can not either understand or speak or write fluently. This should be conducted in regional languages so that the primary teachers may be benefitted by it.

Improvements Suggested in Terms of Content of Training, Process of Training (Teaching) and Process of Practice Teaching, Organisation of Training and Evaluation of Examination

Regional Institutes of Education (RIEs)	Suggested improvement in content of training	Suggested improvement in process of training (Teaching)	Suggested improvement in practice teaching	Organisation of training	Suggested improvement of evaluation of examination
1	2	3	4	5	6
Ajmer	1 Syllabus should be simple and precise. 2 It should be in Hindi. More practical should be included 3. Role of toys should be taught. Interest of rural children should be kept in mind 4. Training in curriculum adjustments and adaptation 5 It should be flexible	1. Disabled children should be brought to the teaching classes. 2 Teaching should be in regional languages 3 More demonstrations should have been involved 4 Teaching should involve audio visual support	1. Practice should have been provided in integrated schools 2 More aids and equipments should be used during the practice teaching 3. Raw material for preparation of teaching learning materials should have been provided 4 Practice should be organised disability wise	1. Training should be given in regional languages 2. Training should be for one full academic year 3 NCERT should be involved more in the training programmes 4. Visits to all national institutes should be organised. 5 Specialists should be called for teaching and for making the reaching learning material	1 There should be continuous evaluation. 2 Grade should be indicated in the certificates 3 Minimum pass marks should be 60% 4 Class assignments should also be con-sidered for evaluation 5 Evaluation should be done only through via-va 6 Examination should be organised by State Board or University 7 Paper should be bilingual.
Mysore	1 More importance should be given to physical education and vocational training 2. Teaching of mentally retarded and hearing impaired should be improved 3 Stress should be on playway methods.	1 Process of training should be in mother tongue 2 More video films should be included in the training programme 3. There should be less time for theory classes	1 Practice teaching should be arranged in integrated schools. 2 Additional periods should be alloted for model teaching classes 3 More experience should be provided for practice teaching	1 It should be full one year training programme 2 Teachers beyond 50 years should not be allowed for under-going training. 3 More sears should be there for training programme	1 Marks obtained by the trainees may be shown on the certificate 2 Question paper should be moderated. 3. Paper should be in regional languages

	4. More training should be provided for braille 5 Additional periods for physiotherapy and speech therapy should be organised	4. Methods for repairing various aids and equipments should be demonstrated 5. Well equipped resource room should be part of each RIE where training is taking place. 6 More specialists should be involved in teaching.	4 More demonstration for practice teaching should be arranged in different disabilities	4. More lady teachers should be involved. 5 Demonstration classes for innovative and simple ideas to prepare low cost material should be arranged 6. More educational visits should be organised. 7 Visits to national institutes should be included in the programme 8. Materials should be provided before the training.	4 Question paper should be bilingual
Bhubaneswar	1. More practical work and demonstration should be involved in the training programme. 2. More emphasis should be on mentally handicapped children. 3. Minimum three months should be devoted to each disability regional languages	1 Teaching should be done with the help of using aids and equipments 2 More equipped staff should be made responsible for training the teachers 3 Teaching should be done in regional languages 4 Resource room should be established for organising the teacher training programme	1 Proper aids and equipments should be used for organising practice teaching 2. Integrated schools should be fixed for practice teaching. 3 Practice teaching should be fixed in the home state of the trainees so that better understanding between students and teachers should be established.	The attitude of the administrators as well as the clerical staff should be positive for multi- category teachers	1 Evaluation should be continuous 2 Monthly evaluation should be three 3 Simple questions should be asked 4 Trainees should be allowed to answer the question paper in regional language 5. More emphasis should be on internal assessment 6 More than two examiners should be there for evaluation to avoid bias 7 One of the examiner should be from NCERT

Bhopal	1 Syllabus should be reduced or time should be increased. 2. More practical work should be included in the training programme. 3 Books should be provided for each disability 4 More visits should be organised 5 Procedure for identifying learning disabled children should be included. 6 Emphasis should be given for the teaching of mild and moderate disabled children	1. Teaching should be in mother tongue. 2. More demonstration should be involved in the training programme.	1. More practice should be given for training. 2. Practice should be organised in integrated schools 3. Separate practice should be given in each disability.	1. More visits to integrated schools should be arranged 2. Teachers who are working in integrated schools should be sent for the training programme. 3. Community and parents should be involved in the training programme. 4 Training should be organised in regional languages 5. Aptitude of the teachers should also be taken into account while selecting teachers for training course.	1. Evaluation should be conducted in regional languages.

Remedial Instruction for Teaching Multiplication to Children with Dyscalculia in Inclusive Primary School

An Experimental Study

I. P. Gowramma*
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Abstract

The article explains the difficulties encountered by children with dyscalculia — a specific learning disability. The authors deal with one of the fundamental arithmetical operations, i.e. multiplication. The study aims at developing remedial arithmetical programme to teach children with dyscalculia. The effectiveness of the programme has been studied through experimental design. The authors have identified common errors in multiplications and compared them in children with and without dyscalculia. The study has implications for teaching multiplication in inclusive schools.

Key words . Remedial Instruction, Dyscalculia, Inclusive Education.

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ARITHMETIC represents an important area of instruction in schools — proficiency in arithmetic is expected beyond the classroom. Some, children, though they have normal intelligence, fail to achieve this basic skill at an expected rate This may be due to specific learning disability in the area of arithmetic. Learning disability refers to a specific retardation or disorder in one or more of the processes of speech, language, perception, reading, spelling or arithmetic (Kirk, 1968). This does not include learning problems which are due to sensory handicap, motor problem, mental retardation, emotional disturbance or adverse environmental factors. The term dyscalculia is used to represent this specific learning disability(LD).

Dyscalculia is most commonly observed among learning disabled children. It could be a manifestation of disabilities in other primary academic areas such as language, reading and writing. It can also exist independently in the absence of other disabilities.

Characteristics of Children with Dyscalculia

Children with arithmetic disability usually have normal or above average intelligence. That is why they are not differentiated from normal population. Only a closer look at them reveals that they differ from their age-mates.The knowledge of their characteristics and difficulties usually experienced by them are useful in indentifying are listed below ·

1. They have poor visual memory, visual recognition and sequential memory They show difficulty in reading and writing numerals and have difficulty in recognising categorical structure of numbers. Sequence of steps to be used in various arithmetic operation cannot be followed by them
2 Many students with arithmetic disability are deficient in visual spatial organisation and non-verbal integration. So, the children may have problem in acquiring the pre-requisite skills necessary for arithmetic like distinguishing differences between shapes, sizes and quantities.
3. They have disturbance in visual motor integration, thus cannot write that they intend to write.
4. They do not have a strong sense of direction, have problem in understanding concept of time, money and measurement
5. They have poor visual discrimination and difficulty in differentiating shapes and symbols.
6. They are unable to choose the principles for solving problem as they have poor reasoning ability. Even if, they can do fundamental operations they do not know when to use the particular operation depending upon the demand of the situation.

7. Sometimes they show inconsistency in doing arithmetic operations as they are not clear with either the procedure or the operation.

The number of students with difficulty in arithmetic is quite large They may experience the above difficulties and exhibit the characteristics in different combination and in varying degrees. -

Importance of the Study

In the present article, the authors deal with only one of the fundamental operations—multiplication, though all the fundamental operations were considered in the original study

Multiplication process is a complex task and the concept is confusing It is assumed that normal population in classroom develop their skill for this complex process automatically. But an alarming 6% of our population, who suffer from Dyscalculia, find it very difficult to understand the concept of multiplication. If it is not remediated at the right time, it leads to problems in other areas of arithmetic where multiplication becomes a prerequisite. Here comes the need to develop a remedial instruction programme for such children so that their performance will match to that of their peers.

Many earlier investigators observed specific difficulties in multiplication among dyscalculic children. Some of the important observations are given below.

Ramaa (1990) in her investigation report observed that dyscalculics exhibit homogeneity in terms of arithmetic difficulties experienced and types of errors committed by them. She observed that dyscalculics multiply in a wrong sequence.

Confusion in symbol was noticed by Wagner (1980) among LD children. McLeod and Armstrong (1982) listed multiplication of whole numbers as one of the areas of difficulty for children with learning disability.

Children with dyscalculia were found to be failing to recall tables and carry numbers in multiplication by case studies conducted by Cohn (1968, 1971).

In a recent study by Ramaa and Gowramma (1999) an attempt was made to analyse the arithmetic errors committed by three Class VIII students with LD. These students were undergoing remedial instruction in a special centre for one year. These students were administered the Arithmetic Diagnostic Test (Ramaa, 1994) before starting remediation It was surprising to note that all of them exhibited basic errors while doing multiplication sums.

This shows that the arithmetic difficulties may become persistent even at the higher grades of schooling unless and otherwise their difficulties are corrected at the early stage. This emphasises the need for continuous remedial instruction for CWD throughout their schooling.

Though there are studies of the above sort to explore and analyse the types of difficulties faced by Children with Dyscalculia (CWD), the attempt to remediate these difficulties are very much limited. In a study by Lombardo and Drabman (1985) the investigators attempted two procedures to teach multiplication to LD children and compared the results. The experimental groups were suggested to use verbal mediation while doing multiplication whereas the other group did it without overt verbalisation of the procedure The performance of the experimental group was significantly better than that of the control group. This shows that with simple principles and strategies, it is possible to make CWD to learn multiplication

The reasons for limited attempts to develop remedial instruction materials for dyscalculics may be due to some of the new trends in mathematics education. Fischbein (1990) in his article *Psychology and Mathematics* has reviewed some recent trends that tend to shape the future course of mathematics education. He has observed that from the mid seventies the researchers had devoted much time and effort to the problems and concepts of 'artificial intelligence'. Those researchers try to translate the problems of mathematics education in terms of the information processing approach. In the place of developmental and cognitive psychology as major sources of influence on mathematics education, modern perspective of cognitive science has taken upper hand. As per this perspective, short term and long term memory, working memory and routines and sub-routines are considered more important No doubt, artificial intelligence metaphors and computer assisted instruction have beneficial effects both theoretically and didactically. Through computer assisted instruction, students may improve their capacity to analyse their own reasoning processes, may become more active or may be involved actively and interact intelligently with the computer in defining and solving the original problems.

But certainly instructional process through computer has its own limitations. Seriously, computerised instruction may become a real danger especially when its use is emphasised as an integral part of school education. Because in the opinion of Dreyfus and Dreyfus (1986) expertise cannot be reduced to an aggregate of elementary skills acquired stepwise at lower levels. Fischbein (1990) particularly insist on this point because he felt that there is a tendency to include the computer in teaching programmes without a careful consideration of its psychological and didactical effects. Dreyfus and Dreyfus (1986), and Fischbein (1990) agree that the experts react globally, by intuition, on the basis of rich experience Formerly learnt rules do not play an important role any more at expert level However, this intuition is not irrational but scientifically analysable (Fischbein, 1987).

This suggests that computer cannot always take the task of simulating every type and every level of our intelligent behaviour and also computer cannot tutor every aspect of a learning process. So, there is a need for developing remedial instructional methods and materials which can take care of all the abilities required for mathematics learning — concepts, skills and problem solving strategies. This type of materials and methods will be more effective when the activities involved has rich experiences involving real life situations, social interaction with the peers and adults like teacher and parents which is especially true with children with LD The present study is an attempt to develop a remedial instruction material for teaching multiplication to CWD, keeping in mind the above assumptions.

Objectives

The specific objectives of the study were :

1. To identify children with dyscalculia in primary schools.
2. To analyse the errors committed by dyscalculics and normal children of Classes III and IV while doing multiplication sums.
3. To develop a remedial arithmetic programme to teach multiplication to CWD.
4. To find out the effectiveness of the remedial arithmetic programme developed to teach multiplication.

Hypothesis

The present study attempted to verify different hypothesis. The one which is most relevant to the present part of the study is given below.

The remedial arithmetic programme developed in the study will be effective in improving the performance of dyscalculic children in multiplication.

Methodology

Fifteen primary schools were selected in Mysore city depending upon the feasibility to administer various tests and also to carry out remedial programme. A standard procedure for identifying children in Classes III and IV with Dyscalculia was used based on exclusionary criteria. Children who exhibited arithmetic retardation of atleast two years, compared to their grade level were considered for the study. These children had normal sensory, visual and auditory functioning, no serious social and emotional problems and had adequate intelligence. Out of the total population of 1400, using the exclusionary and inclusionary criteria using various tools and techniques, 82 children were identified as CWD.

Selection of Normal Children

To compare the performance of CWD with normal children, a matched group of normal children were selected by obtaining a list of students who perform at an average level in Classes III and IV by the class teacher. The teacher's opinion was cross-checked through informal assessment.

On the basis of the responses to items of arithmetic diagnostic test, a detailed analysis of the errors was made, in doing all the sums. In the present article, only errors related to multiplication is discussed. The analysis was done with two purposes, the first purpose was to identify the types of errors and to understand the probable reasons for the errors/difficulty/deficiency. The second purpose was to compare the types of errors committed by both the groups in terms of percentage. Tables 1 and 2 give the results of the analysis.

TABLE 1

Common Errors Noticed in Multiplication in Normal Children and CWD

S. No	***Errors***	***Example***	***Probable Reasons***
1.	Does not attempt	5=x6	1 Does not know the multiplication fact 2. Cannot verbalise the numerical expression
2.	Adds the number	35 +3 ---- 38 ----	1 Confusion of symbols 2 Does not know the multiplication fact 3. Transfers the procedure learnt earlier, which is not appropriate
3	Cannot carry digits	15 3	1 Lack of procedural knowledge of multiplication 2 No place value concept
4	Cannot multiply 'O'	50 x2 10 ---	No '0' concept
5.	Does not know multiplication facts correctly	33	1 Poor memory 2 Lack of attention
6.	Forgets to add the digit carried	15	1 Lack memory 2. Lack of attention
7	Adds the carried digit before	15	1 Confusion of procedure multiplying

Comparison of Errors among CWD and Normal Children

In order to compare the errors committed by both normal children (N=30) and CWD (N=82), Arithmetic Diagnostic Test

TABLE 2

Percentage of Children who Exhibited Different Types of Errors/Deficiency in Multiplication

S No.	*Error/Deficiency*	*Percentage in Group A**	*Percentage in Group B***
1	Lack of concept and skill of multiplication	60	0
2	Added the number instead of multiplying	37	6 89
3	Could not perform multiplication involving more than one digit	100	44 80
4	Did not know multiplication when 'o' was present	100	41 00

* Group A - Children with Dyscalculia
** Group B - Normal children

From Table 2, it is observed that none of the dyscalculics knew the multiplication of more than one digit and when 'o' was one of the factors. Around 40 per cent of normal children also had problem in the same area. It is thus evident that normal children also have committed errors and exhibited deficiency in multiplication. However, compared to dyscalculics their percentage is low. Earlier studies by other investigators also support difficulties experienced by CWD in all the arithmetic operations in general and multiplication in particular.

Rourke (1982), Strang and Rourke (1985), Wood (1980), Wagner (1981) noticed the error in visual detail, which leads to misreading of computational signs (+ and x). Kosc (1974) noticed that dyscalculics are generally poor in acquiring the concept and performance in mathematical operation These types of difficulties were also observed by Luria (1966a, 1966b, 1970) Difficulty in multiplication of whole numbers was observed by McLeord and Armstrong (1982), Ramaa (1990), Cohn (1968, 1971)

Ramaa and Gowramma (1999) observed the above types of difficulties in doing multiplication among LD children of Class VIII.

Planning and Preparing the Remedial Instruction Material

Based on the errors/deficiencies exhibited by children, also keeping in mind the general principles suggested by various researchers a remedial programme to teach multiplication was developed

Some of the general principles to teach arithmetic :

1. Readiness skills should be emphasised.

2. Teach same concept in different representations.
3. Use simple vocabulary
4. Teaching should have direct impact on child's perceptual faculty.
5. Foster cognitive development and arithmetic skill simultaneously.
6. Individualise the instruction.
7. To compensate the areas of deficit, multisensory attack should be made.
8. Associate arithmetic to daily life.
9. Arrange instruction in learning hierarchy.
10. Immediate and continuous success for the students is basic to math instruction.

Specific principles to teach multiplication

1. To compensate for short-term memory performance cues should be used to remember steps while doing multiplication.
2. The terms and symbol of multiplication should be used frequently for better retention.
3. Basic multiplication facts should be taught through different methods.
4. Multiplication should be taught as an application to daily life.
5. Activities should be drawn from situations dear to children.

Main Features of the Remedial Programme

Keeping the above principles in mind, the remedial programme to teach multiplication to children with dyscalculia was developed. Some of the main features of the programme are :

1. The programme was developed in such a way that it caters to the need of majority of children who have problem in learning multiplication.
2. Each lesson has a specific objective.
3. Activities are arranged in sequential order.
4. Achieving the objective of the previous lesson is a prerequisite to go to the next lesson.
5. Lessons are made very short requiring 15-20 mts covering a specific concept.
6. Each activity emphasises on verbalisation and visualisation for concept clarity and acquisition of skill.
7. Learning activities were linked to the previous activities.
8. Concepts were taught using concrete materials. Slowly, it was shifted to semi-concrete and finally the abstract form of numbers were used

Here, since we are discussing only the remedial programme developed for teaching multiplication to children with dyscalculia, a list of prerequisite concepts is given here. A programme was developed to cover them also, before coming to multiplication

Prerequisite Skills to Learn Multiplication

1. Number Concept
2. Place Value
3. Addition

To make sure that children are ready to learn multiplication, an evaluation/review of the prerequisite concepts is necessary.

The programme developed was activity-oriented. The remedial instruction programme of multiplication to teach children with dyscalculia has 23 lessons and 15 sessions were required to complete the administration of the programme to a selected sample of dyscalculics. The following are the specific objectives of each lesson in sequence.

Lesson 1

To learn the terms and symbol of multiplication.

Lesson 2

To read the numerical expression when 'x' symbol is used in different ways.

Lesson 3

To understand the concept of multiplication (without using numerical expression)

Lesson 4

To know that multiplication is nothing but repeated addition.

Lesson 5

To learn multiplication tables 0-5.

Lesson 6

To understand the procedure of multiplication when 0-5 numbers are used

Lesson 7

To solve daily life problems involving the operation multiplication, where numbers from 0-5 were involved.

Lesson 8

To learn multiplication tables 6-10.

Lesson 9

To understand the procedure of multiplication when numbers from 0-10 were used.

Lesson 10

To solve daily life problems involving the operation of multiplication where numbers from 0-10 were used.

Lesson 11

To learn the skill of multiplying a 2-digit number by a 1 digit number.

Lesson 12

Multiplying a 2-digit number by 10.

Lesson 13

Multiplying a 2-digit number by multiples of 10.

Lesson 14

Multiplying a 3-digit number by 1 digit number.

Lesson 15

Multiplying a 3-digit number by 10.

Lesson 16

Multiplying a 3-digit number by multiples of 10.

Lesson 17

Multiplying a 2-digit number by a 2 digit number.

Lesson 18

Multiplying a 3-digit number by a 2 digit number

Lesson 19

Multiplying a 2-digit number by 100

Lesson 20

Multiplying a 2-digit number by multiples of 100.

Lesson 21

Multiplying a 3-digit number by 100.

Lesson 22

Multiplying a 3-digit number by multiples of 100.

Lesson 23

To solve simple daily life problems involving multiplication

Sample Lesson

The planning phase of the remedial procedure consisted of writing out the remedial programme on the above mentioned lines. One sample lesson is given below.

Lesson 14

General Objective . To enable the children to understand the concept and procedure of multiplication.

Specific Objective : Multiplying a three digit number by a single digit number.

Example 1

Multiply 369 by 2

369
x 2

I Method : Multiply each of the number by two and add them

9x2 = 18
60x2 = 120
300x2 = 600
738

II Method : Multiply nine by two. Write units in unit's place and carry the tens to tens place.

1
369
x 2
8

Multiply six by two, add the carried digit, write the tenth digit in tens place, carry the hundred's digit to hundred's place

1
369
x 2
38

Multiply three by two, add the carried digit, write the answer in hundred's place

369
x 2
738

The students imitate the same problem once with the model and next without the model. Then, as many as 30 similar sums for exercise were given.

Validation of the Remedial Instruction Material of Multiplication

In order to validate the effectiveness of the remedial programme developed, a pre-test - post-test single group design was considered to be appropriate because of the inter-individual differences among identified children and non-availability of the matched control group.

The treatment was given to eight children out of the 82 children identified in the initial phase of the study. However, care was taken to see that these eight children were the representatives of other children with dyscalculia in terms of errors committed in all the fundamental operations.

The programme was administered daily for an hour in 15 sessions on working days in schools. Continuous evaluation was done and reduction in error was noticed. Post-test scores indicated that on the whole the programme was effective.

Analysis of the Experimental Data

In order to verify the effectiveness of the programme in developing multiplication skills among CWD the scores obtained during pre-test and post-test were subjected to quantitative analysis by using 't' test of significance The table below gives the mean, SD and 't' ratio.

TABLE 3

Mean Performance on Pre-test and Post-test in Multiplication

Tests	*N*	*M*	*SD*	*t-ratio*
Pre-test	8	0.75	1.48	
Post-test	8	29 88	2.85	25.61*

* t-value significant at 0.01 level.

It can be understood from the table that the programme developed is effective in improving multiplication skills among CWD.

In addtion to comparing the mean performance at pre-test - post-test level on the multiplication scores, further analysis was done with reference to different criterion measures relating to multiplication.

TABLE 4

Percentage of Cases Passed in Pre-test and Post-test in Multiplication — One Digit Number X One Digit Number

Item	*Percentage in Pre-test*	*Percentage in Post-test*
1.	25	100
2.	12.5	100
3.	0	100

TABLE 5

Percentage of Cases Passed in Pre-test and Post-test in Multiplication — More than One Digit Number × One Digit Number

Item	*Percentage in Pre-test*	*Percentage in Post-test*
1.	0	100
2	0	100
3.	0	87 5
4.	0	100

TABLE 6

Percentage of Cases Passed in Pre-test and Post-test in Multiplication — More than One Digit Number × One Digit Number

Item	*Percentage in Pre-test*	*Percentage in Post-test*
1.	0	100
2.	0	100
3.	0	100
4.	0	100

TABLE 7

Percentage of Cases Passed in Pre-test and Post-test in Multiplication — Multiplying and Arranging the Product in Ascending Order

Item	*Percentage in Pre-test*	*Percentage in Post-test*
1.	0	100

TABLE 8

Percentage of Cases Passed in Pre-test and Post-test in Multiplication — Problem Solving

Item	*Percentage in Pre-test*	*Percentage in Post-test*
1.	0	100
2.	0	100

These Tables reveal that there was a significant improvement in the performance of all the subjects of the experimental group at the post-test stage in the area of multiplication.

Most of the subjects did not have the concept, procedure and skill of multiplication during pre-test. All the subjects performed at the level expected of grade IV children after remediation as revealed in the post-test.

In some of the earlier studies also (Rozario and Kapur, 1992; Pandit, 1993; Kosc, 1977 and Sharma, 1993) a significant improvement was observed in multiplication among LD children after remedial instruction.

Major Findings

1. The research findings show an alarming 6% incidence of dyscalculia in primary school.
2. A systematic procedure to identify children with dyscalculia in primary school was developed.
3. Error analysis related to multiplication skills helps in understanding the difficulties experienced by children with dyscalculia.
4. Major shortcoming in the performance of multiplication was noticed among dyscalculic children. Multiplication of zero and multiplication of numbers when the digits are more than one were observed to be the most difficult areas.
5. A suitable remedial instruction programme to teach multiplication to children with dyscalculia was developed.
6. All the children in the experimental group showed better performance after remediation in multiplication.
7. A remedial arithmetic programme based on the suggested principles, strategies and approaches significantly improves CWD in multiplication.

Implication of Findings for Teaching Multiplication in Inclusive Primary Schools

1. Since the programme developed to teach multiplication to dyscalculia caters to the need of any child, it can be used on anybody who is having problem to learn multiplication due to various other reasons in primary schools.
2. If the specific deficits are identified and faulty strategies adopted to do the operation is rectified, children who are suffering from dyscalculia can be helped to overcome their problem.
3. Though the programme is developed in Kannada, since arithmetic is not language bound, programme can be used anywhere in India and also abroad, with suitable adaptations.
4. Since they have difficulty in prerequisites of multiplication, provision should be made for

remedial instruction in the inclusive schools. Small group or individual instruction would be better.

5 Multiplication was observed to be difficult for most of the normal children also. So, the remedial strategies suggested here can be made use of to teach in the regular classrooms so that it will be helpful to the normal children.

6. Teachers should be trained in methods to teach dyscalculics and other children with disabilities/ difficulties in learning arithmetic.

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Geometry of an Early Intervention Programme at Amar Jyoti

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Abstract

This paper is based on experimental study aimed at starting remedial intervention by involving parents in the education and curriculum planning of the children with special needs The author has also mentioned the models of parental support used for early intervention. This shows how initial assessments can be done by visits and how early intervention can be provided. This has special significance for our country as services at this stage are very rare.

Key words : Intervention, Special Needs Children.

THERE is a time scale to brain development, and the most important year is the first. The first three years of life are crucial for a child. A baby's brain cells proliferate wildly and make connections that shape experiences of a life time. The growing research evidence brings out a simple fact that 'rich experiences produce rich brains'. The age-old debate of nature versus nurture has given way for researchers to chronicle the ways in which genes and the environment interact. 'It is not a competition'. 'It is a dance'.

New research offers hope. In early years, brain is so malleable that a very young child who suffers stroke or injuries that wipe out an entire hemisphere can still mature into highly functional adult. Well-designed pre-

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school programmes can help children overcome glaring deficits of home environment Appropriate therapy may treat dyslexia Inherited problems do bring in greater risk, but the power of environment to remodel the brain cannot be ignored.

'We may not do much to change what happens before birth, but we can change what happens after a baby is born' ***Parents are important part of therapy for early intervention.*** This is an established fact. 'Mothers, as primary care givers, are expected to operate as buffers between the infant and an intrusive over stimulating environment, as well as provide the early responsive care giving, needed for infants to thrive.' (p 31) says Paulsen (1993) in an article on preventive intervention strategies. Parents regulate the environment of the young child so that he/she can unfold in our humanly organised world. But the picture changes, when the child is biologically or environmentally at risk The parents are supposed to regulate the environment for the biologically at risk child, and also to assist him/her in coming to grips with the environment to make the most of life. Here, the target for intervention is the child with the parents seen as 'helps' for professionals who design the treatment programmes (White, Taylor and Moss, 1992)

When the child is considered environmentally at risk, both the child and the parents are targets for intervention (Paulsen, 1993). The parents' living conditions, habits, and/or skills create a risk for the maximal development of the child. In that case the parents are treated as individuals to be 'helped' as well as 'helpers'.

Eiserman and others (1990) found comparable gains by children involved in home-treatment using trained parents and those who used clinic-based treatment. White, Taylor and Moss (1992) described parents as supplemental intervenors. The present public law in the U.S.A. ensures that the parents are part of the intervention programme by requiring them to be present during evaluations and treatment, asking them for their goals, and asking them to identify family strengths and weaknesses, and involving them in planning with the treatment team. Thus, giving a formal recognition to the role of parents, we would however like to go beyond the legal 'inclusion' of parents as a member of the interdisciplinary team in the advanced countries. We would like to conceptualise and demonstrate how parents are integral to both assessment and treatment in home-based intervention.

A Pilot Study

To measure the effect of parental cooperation on the achievement of developmentally slow pre-schoolers, a study was conducted at the Institute of Special Education, YMCA, New Delhi (1983-84). The project involved 11 children. The first three months were used for initial assessment based on weekly home-visits and coordination of interdisciplinary evaluations This was followed by developmental assessments on Portage Check list. Every six-months follow-up assessments were made and the points gained in socialisation, language, self-help, motor and cognitive development were recorded.

Parents were evaluated on the Parental Behaviour Inventory by the researcher. A system of quantifying the grades was worked out. A positive correlation was noticed between the gain points of the children and parental behaviour scores after the third session, when the researcher had established rapport with the participating parents and was able to train the parents to a certain extent to neutralise the effects of low educational level and socio-economic status of the parents. The effects of maturation, in this kind of a study cannot be negated. But, generally parents scoring high on Parental Behaviour Inventory (P B.I.) scale elicited better response from their children and better gains in the form of skill development.

Early Intervention

Early intervention and parental involvement through parent training, education and counselling are getting greater and great support all over the world. A number of research studies have supported these findings. The Portage model, originally developed by Shearer and Shearer (1974) in Portage, Wisconsin, USA, is a home training programme directly involving parents in the education and training of their children, through weekly home visits by a home adviser. Around the same time, Peter Mittler at Manchester University, U K , started working with parents of mentally handicapped children through Parental Involvement Project (PIP), and trained several parents of handicapped children through training workshops and follow-up workshops

In the Indian context, Prerana Mohite, Lecturer in Child Development, M S University, Baroda (1991) conducted a study titled *Home-Based Programme for mothers of children with learning difficulties*. The study indicated that mother education proved to be effective, viable and feasible in helping mothers to enrich and gear home environment to benefit children's learning at school Through intervention, it was possible to reduce disparity between home and school environment. The improved environment at home helped children learn better at school

The findings have implications for mother/parent education to strike closer congruence between home and school. The consideration of parents as partners in educational intervention, avoids wastage and stagnation at primary school level. It is essential for children with learning difficulties that schools have parent involvement/ education to back up the classroom inputs. The institutionalisation trend started four decades ago in the west to provide help to the parents of the handicapped is giving way to de-institutionalisation and parental involvement. In the Indian scenario where services for the handicapped are not established, the mistakes committed by others of empowering the state to free the parents of their responsibility, must be avoided. The diversity of child-centred service for rehabilitating the handicapped can never get sufficient professional support. The need is for '*empowerment of the parents*' to plan for their child with training inputs and support from the interdisciplinary professionals.

Parent Support Groups

The last two decades have been historical in terms of growing numbers of parent organisations to develop partnership with professionals The professionals are realising the shortage of their availability for each child, are converting their hostility towards families into friendly gestures and extended hands of co-operation. The first national conference of Parent organisation was convened by the National Institute for the Mentally Handicapped (NIMH) on 30 November 1990 at Secunderabed.

Several models of family-oriented services have developed over the years. At Amar Jyoti, the following models are being used for early intervention and early parent support :

- Centre-based group activities of parent support groups
- Parent-teacher meetings
- Group parent training programmes
- Parent to parent and parent to professional support

The group parent training programme would like to involve the siblings of the handicapped in this programme. A parent support group under the name of Aradhana is a logical outcome of these efforts. A series of one-day weekly workshops were conducted in October 1998 and parents participated along with grandparents and siblings The positive response of the participants have encouraged us to work out a project which will make this kind of service a regular and on going project.

The Amar Jyoti Experiment

In July 1990, Amar Jyoti Child Guidance Centre started functioning in east of Delhi, where no guidance and counselling facilities existed for the children who faced behaviour or academic achievement problems. Amar Jyoti Integrated School for orthopaedically handicapped along with medical and para-medical facilities existed since 1981 Delhi was growing eastwards and it was realised that parents of children with disabilities have to travel a long distance to avail of any service. After the inauguration of the Child Guidance Centre, parents started coming seeking guidance, and admission, if possible, in the school Children from culturally deprived backgrounds and delayed admission of first generation learners were placed in class and were gradually integrated into the normal school, as and when they got ready for a certain grade

Slow learning borderline children were placed in special classes with trained special educators. Gradually the special section has grown into five groups with five special educators. Some of the children are integrated for different subjects with different grades according to their ability levels. All the children are integrated for recreational and leisure time activities. They use the same transport, sports and canteen facilities

Another group of children emerged out of the referrals made to the Child Guidance Centre with multiple disabilities like cerebral palsy, delayed development, partial hearing and visual impairments, perceptual problems alongwith motor and speech complications. This is the group of children that we are concerned about in this paper and for whom parental education, involvement and early intervention are aimed at. Early intervention in this study does not only mean early in the life of the child, but also early in the recognition of disability at Amar Jyoti Child Guidance Centre. Parent education and involvement start from the stages of developing acceptance of disability, amelioration of conditions with medical, paramedical educational, recreational and vocational inputs and guiding the parents through family support groups.

Objectives

- To enhance developmental approach to teaching
- To take into account all the areas of development, that is, cognitive, language, motor, social and self-help skills
- To provide guidance and suggestion for teaching new skills to parents
- To involve parents in the education and curriculum planning of children with special need.
- To start remedial intervention as early as possible.

Early Intervention Programme, started informally with a part time volunteer at Amar Jyoti Child Guidance Centre in 1991, became a regular service in August 1992. After psychometric, medical and para-medical assessments and a case conference attended by the inter-disciplinary team of professionals, the children are registered for home training programme

Eight case studies of these children were selected in 1993-94 for presentation. The criteria of selection was regularity of attendance and a minimum number of eight sessions attended by parents For the initial assessment, before starting the training the children were scored on "NIMH checklist for pre-primary level" These children were again scored after a year on the same tool.

The parents of these children were assessed on Parental Behaviour Inventory developed by Richard D. Boyd and Kathleen A. Stauber A method of quantification of this assessment was worked out by replacing percentage rating by point-scores as given below :

Score of 5 points for	1.25%
Score of 10 points for	26.50%
Score of 15 points for	51.75%
Score of 20 points for	76.100%

Out of the total obtained score, a percentage of obtained scores was calculated. The scores on NIMH checklist for pre-primary level were also quantifiable in five areas and were summed up as a total score.

Tools Used

1. The NIMH Checklist, Narayan, J , Kutty, Thressia A T. (1989).
2. Parental Behaviour Inventory by Boyd, Richard D., Stauber, Kathleen A.

It was generally observed that the parents who scored high on the Parental Behaviour Inventory, were able to help their children in achieving greater number of skills as indicated by the pre-training and post-training scores on assessment checklist. The sample was too small to bring out any generalisations. A number of factors, like type of disability, severity of disability, family interactions, environmental exposures, regularity of participation and follow-up, co-operation of the family along with siblings were important in showing growth and development.

The administration of Parental Behaviour Inventory to the parents was useful in highlighting and pinpointing the areas of parental co-operation and to teach them the basic skills of child management and behaviour modification of socially unacceptable behaviors.

The table below shows the number of children attending the home training programme of different age levels and different types of disabilities.

TABLE 1

Children Attending the Home Training Programme (HTP)

Year	*No. of Children*			*Age*		*Total*	*Type of Disability*
	M	*F*	*0-2*	*2-5*	*5-10*		
1994-95	54	12	15	22	29	66	Slow Learner, C.P; Mentally Retarded; Developmentally Delayed, Microcephaly; Hydrocephaly; Neurological Dystrophy
1995-96	48	17	12	26	27	65	Slow Learner, C P; Mentally Retarded; Developmentally Delayed,Microcephaly, Hydrocephaly, Neurological Dystrophy, Hearing Impaired; Speech Impaired.

1996-97	49	21	8	29	33	70	Slow Learner, C P; Mentally Retarded, Developmentally Delayed,Microcephaly, Hydrocephaly; Neurological Dystrophy, Hearing Impaired , Speech Impaired, L.D
1997-98	35	23	12	26	20	58	Slow Learner, C P, Mentally Retarded,Developmentally Dela-yed; Microcephaly; Hydrocephaly;Neurological Dystrophy Hearing Impaired ; Speech Impaired

Selected case studies of five children from the current list would reveal some truths. They all joined the home training programe at the ages between 6 and 8 months and are now between 1 and 3 years. Their gains in all the areas of development on the Portage Check-list are projected with the changes observed in the parental attitudes, behaviour and participation in the programme of intervention. Training of parenting skills and orientation of special needs is important for ameliorating the effects of disability Noticeable gains in development are observed through early intervention, interdisciplinary approach and involvement of parents.

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Book Review

DIMENSIONS OF CURRICULUM CHANGE J.S. Rajput, New Delhi : **National Council of Educational Research and Training, January 2002, Page iv + 212. Price: Paperback Rs. 80.00; Hardbound Rs. 110.00.**

It is rightly said that Curriculum is a device to translate national goals into educational experiences. Planning and development of curriculum at various levels of school education has been the concern of National Council of Educational Research and Training (NCERT) since its inception. As a professional organisation, it developed its first curriculum framework for school education in the year 1975 and repeated the process in 1988. The efforts of the NCERT in the preparation of detailed curriculum and the textbooks have been greatly appreciated at national level.

The task of up-dating the school curriculum framework was once again taken up in 1999 and NCERT released the 'National Curriculum Framework for School Education(NCFSE)' on November 14, 2000, the birthday of Jawahar Lal Nehru and dedicated to the healthy growth and development of children all over the nation. The curriculum framework generated an enlightened debate on various aspects of school education. Various political parties, intellectuals, media—both electronic and print, and common man got involved in this debate. Certain doubts by vested interests created in the minds of people by drifting the debate to some non-professional issues and hence some effort was needed to present the real position before the nation.

The recently published volume entitled "Dimensions of Curriculum Change" written and documented by Professor J.S. Rajput is a meaningful initiative at the right and appropriate time. The title of the volume is catchy and its publication is very timely. The volume has been ably divided into eight sub sections· (i) The Quest Continues; (ii) Quality Paradigm; (iii) Responsive Change; (iv) Learning Society; (v) Curriculum Renovation; (vi) Subject Ripples; (vii) Life Stills; and (viii) Crucial Concerns, followed by well documented Appendices. In the section · *The Quest Continues*, author has highlighted meaningfully certain emerging issues and objectives of education, a case for education in values for global social cohesion and humanism based on principle of non-violence advocated by Mahatama Gandhi, need for quality perceptions in school education keeping in view the Indian heritage, culture and values. The author has rightly emphasised that the 'basic intent of the NCERT document is to indicate growth and development of the total personality of the leaner be ensured'. For attaining this objective the author refers to Sri Aurobindo's ideas of integral education, Swami Vivekananda's man-making education and Gandhi's comprehensive approach to education.

In the context of globalisation and liberalisation, the emphasis in education should be on excellence, equity and relevance. Thus the acquiring skill and competency will be the main focus in any educational endeavour. The author in the present volume has emphasised 'that the establishment of professional institution has not always been guided by the concern for quality and educational ethics.' This applies equally to the institutions of teacher training. The concern of the author for the poor quality of teachers and its lasting impact on the growth and development of millions and millions of children needs serious consideration by the educationists and experts

Involvement of community in taking the responsibility and accountability in the process of education pays rich dividends. In this regard, the author has highlighted the achievements of China in educational expansion through community support and efforts, for which Gandhi always pleaded in the context of Indian situation.

Besides some important issues, the emphasis on value education and education of all religions has been given an important place in NCFSE-2000. The author in the present volume has welcomed all the suggestions on such issues in all humility and has once again reiterated that NCERT is an open forum 'to receive imputes, suggestions and guidance even from its proclaimed critics.'

In the chapter *Initiating Responsive Educational Change*, the author has ably reflected on the problem of fundamentalism and religious obscurantism, which can never be eliminated without knowing the basics of all religions of the people of India. On the inclusion of the use of the term 'Vedic Mathematics' in the curriculum framework, the author has objectively tried to shed the fears of some critics that such usage would not lead to 'Talibanisation of School' Specifically it will encourage students to enhance their computational skill. The argument furnished in the chapter in favour of certain curriculum concerns, viz., Vedic Mathematics, Value Education, Education of all religions are convincing.

The author on the basis of the experience of the last five decades feels that there is need for the honest implementation of education policies and particularly to develop a curriculum for school that would be 'rooted to culture and committed to progress'. For building a cohesive society based upon the 'pillars of quality, equity and relevance', inclusion of indigenous knowledge and recognition of the contribution of Indian thinkers, scientists, creative persons and the communities need to be highlighted appropriately. It would be of immense help in the inculcation of the feeling of belonging to the nation and sense of patriotism and nationalism imbued with the spirit of *'Vasudhaiva Kutumbkkam'*. Meaningful and effective steps need to be taken for 'character building' on one hand and 'integrating science and technology' on other in the development and implementation of school curriculum. While hitting back on the persons with prejudiced perceptions on certain issues of the curriculum framework, the author has built up a strong case that the nation needs 'an educational model rooted to its composite culture and committed to progress'.

The author has emphatically stressed that education is the only hope for peace and for eliminating obscurantism, religious fanaticism, violence, superstition and fatalism. For this, a value-based approach must form the backbone of the education system. Teachers and their preparation should search for innovative strategies of education with emphasis on 'self-learning, self-directed learning, self-motivated learning, co-operative leaning and participative teaching and learning'.

The author has pleaded for a balanced synthesis between change oriented technologies and continuity of country's transition and heritage. He has strongly argued for the development of skills and competencies to decipher the positive and negative impact of process of globalisation and liberalization. For the successful and effective implementation of curriculum, he has suggested the necessity of a multi–pronged strategy.

In conclusion, the volume squarely addresses on different aspects of the school education in the context of curriculum development, renewal and implementation It has meaningfully focused on important issues of school education including Sanskrit in school, History's new relevance, grading the grades, making the school bag lighter and the importance of plus two stage–transition to life and higher education.

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